



grzimek's
Student Animal Life Resource
.....

Birds



grzimek's

Student Animal Life Resource



grzimek's

Student Animal Life Resource



Birds

volume 1

Tinamous to Falcons

THOMSON

GALE

grzimek's

Student Animal Life Resource



Birds

volume 2

Ducks to Auks

THOMSON

GALE

grzimek's
Student Animal Life Resource



Birds
volume 3

Sandgrouse to Woodpeckers



grzimek's
Student Animal Life Resource



Birds
volume 4

Broadbills to Fantails

THOMSON

GALE

grzimek's

Student Animal Life Resource



Birds volume 5

Monarch Flycatchers to Crows

THOMSON

GALE



Grzimek's Student Animal Life Resource Birds

Project Editor

Melissa C. McDade

Editorial

Julie L. Carnagie, Madeline Harris,
Heather Price

Indexing Services

Synapse, the Knowledge Link
Corporation

Rights and Acquisitions

Sheila Spencer, Mari Masalin-Cooper

Imaging and Multimedia

Randy Bassett, Michael Logusz, Dan
Newell, Chris O'Bryan, Robyn Young

Product Design

Tracey Rowens, Jennifer Wahi

Composition

Evi Seoud, Mary Beth Trimper

Manufacturing

Wendy Blurton, Dorothy Maki

© 2005 Thomson Gale, a part of
The Thomson Corporation.

Thomson and Star Logo are
trademarks and Gale and UXL are
registered trademarks used herein
under license.

For more information, contact

Thomson Gale
27500 Drake Rd.
Farmington Hills, MI 48331-3535
Or you can visit our Internet site at
<http://www.gale.com>

ALL RIGHTS RESERVED

No part of this work covered by the
copyright hereon may be reproduced
or used in any form or by any
means—graphic, electronic, or
mechanical, including photocopying,
recording, taping, Web distribution,

or information storage retrieval
systems—without the written
permission of the publisher.

For permission to use material from
this product, submit your request via
Web at <http://www.gale-edit.com/>
permissions, or you may download
our Permissions Request form and
submit your request by fax or mail
to:

Permissions

Thomson Gale
27500 Drake Rd.
Farmington Hills, MI 48331-3535
Permissions Hotline:
248-699-8006 or 800-877-4253,
ext. 8006
Fax: 248-699-8074 or 800-762-4058

While every effort has been made to
ensure the reliability of the informa-
tion presented in this publication,
Thomson Gale does not guarantee
the accuracy of the data contained
herein. Thomson Gale accepts no
payment for listing; and inclusion in
the publication of any organization,
agency, institution, publication,
service, or individual does not imply
endorsement of the editors or
publisher. Errors brought to the
attention of the publisher and
verified to the satisfaction of the
publisher will be corrected in future
editions.

LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA

Grzimek's student animal life resource. Birds / Melissa C. McDade, project editor.
p. cm.

Includes bibliographical references and index.

ISBN 0-7876-9235-2 (set hardcover : alk. paper) — ISBN 0-7876-9236-0

(volume 1) — ISBN 0-7876-9237-9 (volume 2) — ISBN 0-7876-9238-7 (volume 3)

— ISBN 0-7876-9239-5 (volume 4) — ISBN 0-7876-9240-9 (volume 5)

1. Birds—Juvenile literature. I. Grzimek, Bernhard. II. McDade, Melissa C.

QL673.G79 2005

598—dc22

2004015729

ISBN 0-7876-9402-9 (21-vol set), ISBN 0-7876-9235-2 (Birds set),
ISBN 0-7876-9236-0 (v.1), ISBN 0-7876-9237-9 (v.2), ISBN 0-7876-9238-7 (v.3),
ISBN 0-7876-9239-5 (v.4), ISBN 0-7876-9240-9 (v.5)

This title is also available as an e-book
Contact your Thomson Gale sales representative for ordering information.



Contents

BIRDS: VOLUME 1

Readers Guidexi
Pronunciation Guide for Scientific Namesxiii
Words to Knowxxvii
Getting to Know Birdsxli

Tinamous and ratites1
Tinamous5
Rheas11
Cassowaries18
Emu24
Kiwis29
Ostrich35

Tubenosed seabirds41
Albatrosses45
Shearwaters, petrels, and fulmars53
Storm-petrels61
Diving-petrels67

Penguins
Penguins71

Loons
Loons82

Grebes
Grebes90

Pelicans and other fishing birds98
Tropicbirds103

Frigatebirds	.109
Cormorants and anhingas	.116
Boobies and gannets	.125
Pelicans	.134
Wading birds and New World vultures	.143
Herons and bitterns	.149
Hammerhead	.160
Storks	.166
New World vultures	.175
Shoebill	.186
Ibises and spoonbills	.192
Flamingos	
Flamingos	.200
Diurnal birds of prey	.207
Hawks and eagles	.212
Secretary bird	.223
Falcons and caracaras	.229
Species List by Biome	.lvii
Species List by Geographic Range	.lxiii
Index	.cix
BIRDS: VOLUME 2	
Readers Guide	.xi
Pronunciation Guide for Scientific Names	.xiii
Words to Know	.xxvii
Getting to Know Birds	.xli
Ducks, geese, swans, and screamers	.241
Ducks, geese, and swans	.246
Screamers	.261
Chicken-like birds	.266
Moundbuilders	.270
Curassows, guans, and chachalacas	.279
Guineafowl	.288
Fowls and pheasants	.294
New World quails	.303
Hoatzin	
Hoatzin	.310
Cranes, rails, and relatives	.315
Mesites and roatelos	.320
Buttonquails	.326

Cranes . . . . .	.333
Limpkin . . . . .	.344
Kagu . . . . .	.349
Rails, coots, and moorhens . . . . .	.356
Sungrebes . . . . .	.366
Sunbittern . . . . .	.372
Trumpeters . . . . .	.376
Seriemas . . . . .	.382
Bustards . . . . .	.387

Gulls, terns, plovers, and other shorebirds395

Jacanas . . . . .	.399
Painted snipes . . . . .	.407
Crab plover . . . . .	.413
Oystercatchers . . . . .	.417
Stilts and avocets . . . . .	.423
Thick-knees . . . . .	.431
Pratincoles and coursers . . . . .	.436
Plovers and lapwings . . . . .	.444
Sandpipers . . . . .	.453
Seedsnipes . . . . .	.464
Sheathbills . . . . .	.469
Gulls, terns, and relatives . . . . .	.475
Auks, puffins, and murres . . . . .	.486

Species List by Biome . . . . .	.lvii
Species List by Geographic Range . . . . .	.lxiii
Index . . . . .	.cix

BIRDS: VOLUME 3

Readers Guide . . . . .	.xi
Pronunciation Guide for Scientific Names . . . . .	.xiii
Words to Know . . . . .	.xxvii
Getting to Know Birds . . . . .	.xli

Sandgrouse

Sandgrouse497
----------------------	------

Pigeons, doves, and dodos504

Pigeons and doves . . . . .	.508
Dodos and solitaires . . . . .	.517

Parrots

Parrots522
-------------------	------

Turacos and plantain eaters

Turacos and plantain eaters538
---------------------------------------	------

Cuckoos, anis, and roadrunners

Cuckoos, anis, and roadrunners545

Owls552

Barn owls557

Owls564

Nightjars574

Oilbird579

Frogmouths585

Owlet-nightjars591

Potoos596

Nightjars602

Swifts and hummingbirds610

Swifts615

Tree swifts624

Hummingbirds630

Mousebirds

Mousebirds639

Trogons

Trogons644

Kingfishers, todies, hoopoes, and relatives653

Kingfishers658

Todies669

Motmots676

Bee-eaters682

Rollers691

Hoopoe701

Woodhoopoes707

Hornbills714

Woodpeckers and relatives725

Jacamars730

Puffbirds738

Barbets747

Toucans757

Honeyguides766

Woodpeckers, wrynecks, and piculets774

Species List by Biomelvii

Species List by Geographic Rangelxiii

Indexcix

BIRDS: VOLUME 4

Readers Guide	.xi
Pronunciation Guide for Scientific Names	.xiii
Words to Know	.xxvii
Getting to Know Birds	.xli

Perching birds .789

Broadbills	.793
False sunbirds and asities	.801
Pittas	.807
New Zealand wrens	.815
Ovenbirds	.821
Woodcreepers	.830
Ant thrushes	.836
Tapaculos	.845
Tyrant flycatchers	.850
Sharpbill	.860
Manakins	.864
Cotingas	.872
Plantcutters	.881
Lyrebirds	.888
Scrub-birds	.895
Larks	.901
Swallows	.913
Pipits and wagtails	.924
Cuckoo shrikes	.935
Bulbuls	.943
Fairy bluebirds and leafbirds	.955
Shrikes	.962
Vangas	.972
Waxwings and silky flycatchers	.979
Palmchat	.988
Hedge sparrows	.991
Thrashers and mockingbirds	.997
Dippers	.1004
Thrushes and chats	.1013
Babblers	.1025
Wrens	.1036
Old World warblers	.1050
Old World flycatchers	.1060
Australian fairy-wrens	.1070
Australian warblers	.1079
Australian chats	.1087
Logrunners and chowchillas	.1093
Quail thrushes and whipbirds	.1099
Fantails	.1105

Species List by Biome	lvii
Species List by Geographic Range	lxiii
Index	cix

BIRDS: VOLUME 5

Readers Guide	xi
Pronunciation Guide for Scientific Names	xiii
Words to Know	xxvii
Getting to Know Birds	xli
Monarch flycatchers	1115
Australian robins	1123
Whistlers	1130
Pseudo babbler	1139
Australian creepers	1145
Long-tailed titmice	1151
Penduline titmice	1158
Titmice and chickadees	1164
Nuthatches and wall creepers	1173
Treecreepers	1182
Philippine creepers	1188
Flowerpeckers	1194
Pardalotes	1202
Sunbirds	1208
White-eyes	1218
Australian honeyeaters	1225
Vireos and peppershrikes	1235
New World finches	1244
New World warblers	1258
New World blackbirds and orioles	1268
Finches	1278
Hawaiian honeycreepers	1288
Waxbills and grassfinches	1296
Weavers	1306
Sparrows	1318
Starlings and mynas	1326
Old World orioles and figbirds	1337
Drongos	1345
New Zealand wattlebirds	1353
Mudnest builders	1360
Woodswallows	1366
Magpie shrikes	1372
Bowerbirds	1380
Birds of paradise	1389
Crows and jays	1398
Species List by Biome	lvii
Species List by Geographic Range	lxiii
Index	cix



Reader's Guide

Grzimek's Student Animal Life Resource: Birds offers readers comprehensive and easy-to-use information on Earth's birds. Entries are arranged by taxonomy, the science through which living things are classified into related groups. Order entries provide an overview of a group of families, and family entries provide an overview of a particular family. Each entry includes sections on physical characteristics; geographic range; habitat; diet; behavior and reproduction; animals and people; and conservation status. Family entries are followed by one or more species accounts with the same information as well as a range map and photo or illustration for each species. Entries conclude with a list of books, periodicals, and Web sites that may be used for further research.

ADDITIONAL FEATURES

Each volume of *Grzimek's Student Animal Life Resource: Birds* includes a pronunciation guide for scientific names, a glossary, an overview of birds, a list of species in the set by biome, a list of species by geographic location, and an index. The set has 640 full-color maps, photos, and illustrations to enliven the text, and sidebars provide additional facts and related information.

NOTES

The classification of animals into orders, families, and even species is not a completed exercise. As researchers learn more about animals and their relationships, classifications may change. In some cases, researchers do not agree on how or whether to make a change. For this reason, the heading "Num-

ber of species” in the introduction of an entry may read “About 36 species” or “34 to 37 species.” It is not a question of whether some animals exist or not, but a question of how they are classified. Some researchers are more likely to “lump” animals into the same species classification, while others may “split” animals into separate species.

Grzimek’s Student Animal Life Resource: Birds has standardized information in the Conservation Status section. The IUCN Red List provides the world’s most comprehensive inventory of the global conservation status of plants and animals. Using a set of criteria to evaluate extinction risk, the IUCN recognizes the following categories: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Conservation Dependent, Near Threatened, Least Concern, and Data Deficient. These terms are defined where they are used in the text, but for a complete explanation of each category, visit the IUCN web page at <http://www.iucn.org/themes/ssc/redlists/RLcats2001booklet.html>.

ACKNOWLEDGEMENTS

Special thanks are due for the invaluable comments and suggestions provided by the *Grzimek’s Student Animal Life Resource: Birds* advisors:

- Mary Alice Anderson, Media Specialist, Winona Middle School, Winona, Minnesota
- Thane Johnson, Librarian, Oklahoma City Zoo, Oklahoma City, Oklahoma
- Debra Kachel, Media Specialist, Ephrata Senior High School, Ephrata, Pennsylvania
- Nina Levine, Media Specialist, Blue Mountain Middle School, Courtlandt Manor, New York
- Ruth Mormon, Media Specialist, The Meadows School, Las Vegas, Nevada

COMMENTS AND SUGGESTIONS

We welcome your comments on *Grzimek’s Student Animal Life Resource: Birds* and suggestions for future editions of this work. Please write: Editors, *Grzimek’s Student Animal Life Resource: Birds*, U•X•L, 27500 Drake Rd., Farmington Hills, Michigan 48331-3535; call toll free: 1-800-877-4253; fax: 248-699-8097; or send e-mail via www.gale.com.

Pronunciation Guide for Scientific Names



Acanthisitta chloris uh-kan-thuh-SIT-tuh KLOR-is
Acanthisittidae uh-kan-thuh-SIT-tuh-dee
Acanthiza chrysorrhoa uh-KAN-thih-zuh KRIH-soh-ROH-uh
Acanthizidae uh-kan-THIZ-uh-dee
Accipitridae ak-sip-IT-ruh-dee
Aceros cassidix AH-ser-uhs KAS-sid-iks
Acridotheres tristis AK-rid-uh-THER-eez TRIS-tis
Actenoides concretus ak-TEN-oi-deez con-CREE-tuhs
Actinodura sodangorum AK-tin-uh-DYOOR-uh soh-dan-GOH-rum
Actophilornis africanus ak-tuh-FIL-or-nis AF-rih-kan-uhs
Aechmophorus occidentalis ek-MOH-for-uhs OK-sih-DEN-tal-is
Aegithalidae ee-jih-THAL-uh-dee
Aegithina tiphia ee-JIH-thin-uh TIF-ee-uh
Aegotheles insignis ee-GO-thel-eez IN-sig-nis
Aegothelidae ee-go-THEL-uh-dee
Agelaioides badius ah-jeh-LAY-oid-eez BAD-ee-uhs
Agelaius phoeniceus ah-jeh-LAY-ee-uhs fee-nih-SEE-uhs
Aix sponsa AKS SPON-suh
Ajaia ajaja ah-JAH-ee-uh AH-jah-juh
Alaemon alaudipes al-EE-mon ah-LAUD-ih-peeZ
Alaudidae ah-LAUD-uh-dee
Alcedinidae al-sed-IN-uh-dee
Alcidae AL-suh-dee
Amytornis striatus am-IT-or-nis stry-AH-tuhs
Anas platyrhynchos AH-nuhs PLA-tee-RIN-koz

Anatidae ah-NA-tuh-dee
Andigena hypoglaucha an-DIH-jin-uh HI-poh-GLO-kuh
Anhima cornuta AN-him-uh KOR-nyoo-tuh
Anhimidae an-HIM-uh-dee
Anhinga anhinga AN-hin-guh AN-hin-guh
Anseriformes an-ser-uh-FORM-eez
Anthus spragueii AN-thuhs SPRAG-ee-eye
Aphelocoma californica uh-fel-uh-KOH-muh kal-uh-FORN-
 ik-uh
Apodidae a-POD-uh-dee
Apodiformes a-pod-uh-FORM-eez
Aptenodytes forsteri ap-ten-uh-DIE-teez FOS-ter-eye
Apterygidae ap-ter-IJ-uh-dee
Apteryx australis AP-ter-iks au-STRA-lis
Ara macao AR-uh MUH-kow
Aramidae ar-UH-muh-dee
Aramus guarauna AR-uh-muhs GWAR-aw-nuh
Ardea herodias AR-dee-uh hir-OH-dee-uhs
Ardeidae ar-DEE-uh-dee
Arenaria interpres ar-en-AIR-ee-uh IN-ter-preez
Artamidae ar-TAM-uh-dee
Artamus cyanopterus AR-tam-uhs SIGH-an-OP-ter-uhs
Astrapia mayeri as-truh-PEE-uh MAY-er-eye
Atrichornis rufescens a-TRIK-or-nis ROO-fehs-sens
Atrichornithidae a-trik-or-NITH-uh-dee
Attagis gayi AT-uh-jis GAY-eye
Auriparus flaviceps aw-RIP-ar-uhs FLAV-uh-seps
Balaeniceps rex bal-EEN-uh-seps REX
Balaenicipitidae BAL-een-uh-sip-IH-tuh-dee
Balearica regulorum BAL-ih-AR-ik-uh reg-YOO-lor-um
Batis capensis BAT-is KAP-en-sis
Bombycilla cedrorum bom-bih-SILL-uh SEED-roh-rum
Bombycillidae bom-bih-SILL-uh-dee
Botaurus stellaris BOH-tor-uhs STEL-lar-is
Branta canadensis BRAN-tuh kan-uh-DEN-sis
Bubo sumatranus BYOO-boh SOO-mah-TRAN-uhs
Bucconidae buck-ON-uh-dee
Bucerotidae byoo-ser-UH-tuh-dee
Bucorvus leadbeateri BYOO-kor-vuhs LED-bet-er-eye

Buphagus erythrorhynchus BYOO-fag-uhs eh-RITH-roh-RIN-kuhs
Burhinidae bur-HIN-uh-dee
Callaeas cinerea cal-LEE-uhs sin-EAR-ee-uh
Callaeidae cal-LEE-uh-dee
Calypte anna kuh-LIP-tee AN-nuh
Campephagidae kam-pee-FAJ-uh-dee
Campephilus principalis KAM-pee-FIL-uhs PRIN-sih-PAL-is
Campylorhamphus trochilrostris KAM-pie-luh-RAM-fuhs
TRO-kil-ih-ROS-tris
Campylorhynchus brunneicapillus KAM-pie-luh-RIN-kuhs
BROO-nee-kap-ILL-uhs
Capitonidae kap-ih-TON-uh-dee
Caprimulgidae kap-rih-MUL-juh-dee
Caprimulgiiformes kal-rih-mul-juh-FORM-eez
Caprimulgus indicus KAP-rih-MUL-juhs IN-dih-kuhs
Caprimulgus vociferus KAP-rih-MUL-juhs voh-SIF-er-uhs
Carduelis tristis KAR-doo-lis TRIS-tis
Cariama cristata KAR-ee-ah-muh KRIS-tah-tuh
Cariamidae kar-ee-AH-muh-dee
Casuariidae kas-oo-ar-EYE-uh-dee
Casuaris casuaris kas-oo-AR-ee-uhs kas-oo-AR-ee-uhs
Cathartidae kath-ART-uh-dee
Cephalopterus ornatus SEFF-uhl-OP-ter-uhs AWR-nah-tuhs
Cercomacra cinerascens SIR-koh-MAK-ruh si-NEAR-ass-enz
Certhia americana SIR-thee-uh uh-mer-uh-KAN-uh
Certhiidae sirth-EYE-uh-dee
Chaetura pelagica KEE-tur-uh peh-LAJ-ik-uh
Chalcoparia singalensis kal-kuh-PAIR-ee-uh sin-GAHL-en-sis
Chamaea fasciata kam-EE-uh fah-she-AH-tuh
Chamaepetes unicolor kam-ee-PEET-eez YOO-nih-KUH-luhr
Charadriidae kar-ad-RYE-uh-dee
Charadriiformes kar-ad-rye-uh-FORM-eez
Charadrius vociferus kar-ad-REE-uhs voh-SIF-er-uhs
Chionidae ky-ON-uh-dee
Chionis minor KY-on-is MY-ner
Chiroxiphia linearis ky-roh-ZIF-ee-uh lin-EE-air-is
Chlamydera maculata klam-EE-der-uh mak-yoo-LAH-tuh
Chlidonias niger klih-DON-ee-uhs NY-jer
Cicinnurus regius sih-SIN-yoor-uhs RAY-jee-uhs

Ciconia ciconia SIK-uh-nee-uh SIK-uh-nee-uh
Ciconiidae sik-uh-NYE-uh-dee
Ciconiiformes sik-uh-nee-uh-FORM-eez
Cinclidae SIN-kluh-dee
Cinclosoma punctatum sin-cluh-SOH-muh PUNK-tah-tum
Cinclus cinclus SIN-kluhs SIN-kluhs
Cinclus mexicanus SIN-kluhs MEK-sih-KAN-uhs
Cinnyris asiaticus SIN-ny-ris AY-zhi-AT-ik-uhs
Cissa chinensis SIS-suh CHIN-en-sis
Cisticola juncidis sis-tuh-KOH-luh JUNK-id-is
Climacteridae kly-mak-TER-uh-dee
Climacteris rufa kly-MAK-ter-is ROO-fuh
Colibri coruscans KOH-lee-bree KOR-us-kans
Coliidae kol-EYE-uh-dee
Coliiformes kol-eye-uh-FORM-eez
Colinus virginianus KOL-eye-nuhs ver-JIN-ee-an-nuhs
Colius striatus KOL-ee-uhs stry-AH-tuhs
Columba livia KUH-lum-buh LIV-ee-uh
Columbidae kuh-LUM-buh-dee
Columbiformes kuh-lum-buh-FORM-eez
Coracias garrulus kor-UH-see-uhs GAR-oo-luhs
Coraciidae kor-uh-SIGH-uh-dee
Coraciiformes kor-uh-sigh-uh-FORM-eez
Coracina typica kor-uh-SEE-nuh TIP-ik-uh
Corvidae KOR-vuh-dee
Corvus corax KOR-vuhs KOR-aks
Corythaeola cristata kor-ih-thee-OH-luh KRIS-tah-tuh
Corythaixoides concolor kor-ih-THAKS-oi-deez CON-kuh-luhr
Cotinga cayana KOH-ting-guh KAY-ah-nuh
Cotingidae koh-TING-guh-dee
Cracidae KRA-suh-dee
Cracticidae krak-TIK-uh-dee
Cracticus torquatus KRAK-tik-uhs TOR-kwah-tuhs
Crax globulosa KRAKS glob-yoo-LOH-suh
Crex crex CREKS CREKS
Cuculidae kyoo-KYOO-luh-dee
Cuculiformes kyoo-kyoo-luh-FORM-eez
Cuculus canorus KYOO-kyoo-luhs KAN-or-uhs
Cyanocitta cristata SIGH-an-uh-SIT-tuh KRIS-tah-tuh
Cyclarhis gujanensis SIGH-klar-is GOO-jan-en-sis

Cygnus olor SIG-nuhs OH-lor
Cymbirhynchus macrorhynchus SIM-bih-RIN-kuhs ma-crow-RIN-kuhs
Cypsiurus parvus sip-SIH-yoor-uhs PAR-vuhs
Dacelo novaeguineae DAY-sel-oh NOH-vee-GIN-ee-ee
Dendrocolaptidae den-droh-koh-LAP-tuh-dee
Dendroica kirtlandii DEN-droy-kuh KIRT-land-ee-eye
Dendropicos goertae den-droh-PEE-kuhs GER-tee
Dicaeidae die-SEE-uh-dee
Dicaeum ignipectus DIE-see-um IG-nih-PEK-tuhs
Dicruridae die-KRU-ruh-dee
Dicrurus ludwigii DIE-kru-ruhs LOOT-vig-ee-eye
Dicrurus paradiseus DIE-kru-ruhs par-uh-DIE-see-uhs
Diomedea cauta eremite DIE-uh-MED-ee-uh CAW-tuh ER-ih-mite
Diomedea immutabilis DIE-uh-MED-ee-uh im-myoo-TUH-bil-is
Diomedeidae die-uh-med-EYE-dee
Donacobius atricapillus don-uh-KOH-bee-uhs ay-trih-kap-ILL-uhs
Drepanididae dre-pan-ID-uh-dee
Drepanorhynchus reichenowi DRE-pan-uh-RIN-kuhs RYE-keh-now-eye
Dromadidae droh-MAD-uh-dee
Dromaiidae droh-MAY-uh-dee
Dromaius novaehollandiae DROH-may-uhs NO-vee-hol-LAND-ee-ee
Dromas ardeola DROH-muhs ar-dee-OH-luh
Drymodes brunneopygia dry-MOH-deez BROO-nee-oh-PIJ-ee-uh
Dulidae DYOO-luh-dee
Dulus dominicus DYOO-luhs duh-MIN-ih-kuhs
Dumetella carolinensis dum-uh-TELL-uh kar-uh-LINE-en-sis
Eclectus roratus EK-lek-tuhs ROH-rat-uhs
Egretta ibis EE-gret-uh EYE-bis
Emberizidae em-ber-IZ-uh-dee
Epthianuridae ep-thy-an-YOOR-uh-dee
Epthianura tricolor ep-thy-an-YOOR-uh TRY-kuh-luhr
Eremophila alpestris ER-em-uh-FIL-uh al-PES-tris
Esacus magirostris EH-sak-uhs MAG-nuh-ROS-tris

Estrilda astrild ES-tril-duh AS-trild
Estrildidae es-TRIL-duh-dee
Eudyptes chrysolophus YOO-dip-teez kreh-soh-LOH-fuhs
Eupetidae yoo-PET-uh-dee
Euplectes orix YOO-plek-teez OR-iks
Eupodotis caerulescens yoo-pod-OH-tis see-ROO-less-sens
Eurylaimidae yoo-rih-lay-IM-uh-dee
Eurypyga helias yoo-RIH-pij-uh HEE-lee-uhs
Eurypygidae yoo-rih-PIJ-uh-dee
Eurystomus orientalis yoo-rih-STOH-muhs or-ih-EN-tal-is
Falco peregrinus FAL-koh PEHR-eh-GRIN-uhs
Falco rusticolis FAL-koh rus-TIH-kol-is
Falconidae fal-KON-uh-dee
Falconiformes fal-kon-uh-FORM-eez
Ficedula basilaria fih-SEH-duh-luh bas-ill-AN-ik-uh
Formicariidae for-mih-kar-EYE-uh-dee
Fratercula arctica frah-TER-kuh-luh ARK-tik-uh
Fregata magnificens FREH-gah-tuh mag-NIH-fih-sens
Fregatidae freh-GAH-tuh-dee
Fringilla coelebs frin-JILL-uh SEE-lebz
Fringillidae frin-JILL-uh-dee
Fulmarus glacialis FULL-mar-uhs glay-SHE-al-is
Furnariidae fur-nar-EYE-uh-dee
Furnarius rufus fur-NAR-ee-uhs ROO-fuhs
Galbula pastazae GAL-bull-uh PAS-tah-zee
Galbula ruficauda GAL-bull-uh roo-fee-KAW-duh
Galbulidae gal-BULL-uh-dee
Gallicolumba luzonica gal-ih-KUH-lum-buh loo-ZON-ik-uh
Galliformes gal-uh-FORM-eez
Gallinago nigripennis gal-uh-NAY-go NY-gruh-PEN-is
Gavia immer GAV-ee-uh IM-mer
Gavia stellata GAV-ee-uh STEL-lah-tuh
Gaviidae gav-EYE-uh-dee
Gaviiformes gav-eye-uh-FORM-eez
Geococcyx californiana GEE-oh-COCK-siks kal-uh-FORN-uh-kuh
Glareola pratincola glar-ee-OH-luh prat-in-KOH-luh
Glareolidae glar-ee-OH-luh-dee
Glaucis hirsuta GLO-kis her-SOO-tuh
Grallina cyanoleuca GRAL-line-uh SIGH-an-uh-LYOO-kuh

Grallinidae gral-LINE-uh-dee
 Gruidae GROO-uh-dee
 Gruiformes groo-uh-FORM-eez
Grus canadensis GROOS kan-uh-DEN-sis
Grus japonensis GROOS jap-ON-en-sis
Gymnogyps californianus JIM-nuh-jips kal-uh-FORN-uh-kuhs
 Haematopodidae hee-muh-toh-POD-uh-dee
Haematopus unicolor hee-muh-TOH-puhs YOO-nih-KUH-luhr
Harpactes oreskios hahr-PAK-teez or-es-KEE-uhs
Heliornis fulica hee-LEE-or-nis FUL-ik-uh
 Heliornithidae hee-lee-or-NITH-uh-dee
Hemiprocne coronata HEMI-prok-nee koh-roh-NAH-tuh
 Hemiprocidae hemi-PROK-nuh-dee
Himantopus himantopus hih-MAN-tuh-puhs hih-MAN-tuh-puhs
Himatione sanguinea hih-MAY-shun-ee san-GWIN-ee-uh
 Hirundinidae hir-un-DIN-uh-dee
Hirundo pyrrhonota HIR-un-doh pir-uh-NOH-tuh
Hirundo rustica HIR-un-doh RUS-tik-uh
 Hydrobatidae hi-droh-BAT-uh-dee
Hydrophasianus chirurgus hi-droh-fay-SEE-an-uhs KY-ruhr-guhs
Hypocolius ampelinus hi-poh-KOL-ee-uhs am-peh-LINE-uhs
Hypothymis azurea hi-poh-THY-mis az-YOOR-ee-uh
Hypsipetes madagascariensis hip-sih-PEET-eez mad-uh-GAS-kar-EE-en-sis
Icteria virens ik-TER-ee-uh VY-renz
 Icteridae ik-TER-uh-dee
Icterus galbula IK-ter-uhs GAL-bull-uh
Indicator archipelagicus in-dih-KAY-ter AR-kih-peh-LAJ-ik-uhs
 Indicatoridae in-dih-kay-TER-uh-dee
Irena puella eye-REEN-uh poo-ELL-uh
 Irenidae eye-REEN-uh-dee
 Jacanidae juh-KAN-uh-dee
Jynx torquilla JINKS tor-KWILL-uh
Lagopus lagopus LAG-uh-puhs LAG-uh-puhs
 Laniidae lan-EYE-uh-dee
Lanius ludovicianus lan-ee-uhs LOO-doh-vih-SHE-an-uhs
 Laridae LAR-uh-dee

Larus saundersi LAR-uhs SON-ders-eye
Laterallus jamaicensis lat-er-ALL-uhs ja-MAY-sen-sis
Leipoa ocellata LYE-poh-uh os-ELL-ah-tuh
Liosceles thoracicus lye-OS-sel-eez tho-RAS-ik-uhs
Lonchura punctulata LON-chur-uh punk-TOO-lah-tuh
Loxia curvirostra LOK-see-uh KUR-vih-ROS-truh
Macrocephalon maleo ma-crow-SEFF-uh-lon MAL-ee-oh
Macronyx ameliae MA-cron-iks am-EEL-ee-ee
Maluridae mal-YOOR-uh-dee
Malurus splendens MAL-yoor-uhs SPLEN-denz
Megaceryle alcyon MEG-uh-ser-EYE-lee al-SIGH-on
Megapodiidae meg-uh-pod-EYE-uh-dee
Megalaima haemacephala meg-uh-LAY-muh hee-muh-SEFF-ah-luh
Melanocharis versteri mel-uh-NOH-kar-is VER-ster-eye
Meleagris gallopavo mel-ee-AY-gris gal-uh-PAY-voh
Melichneutes robustus mel-ik-NOO-teez ro-BUHS-tuhs
Meliphagidae mel-ih-FAJ-uh-dee
Melospiza melodia mel-uh-SPY-zuh meh-LOH-dee-uh
Menura alberti MEN-yoor-uh AL-bert-eye
Menuridae men-YOOR-uh-dee
Meropidae mer-OP-uh-dee
Meropogon forsteni mer-uh-POH-gon FOR-sten-eye
Merops apiaster MER-ops ay-PEE-as-ter
Mesitornis variegata meh-SIT-or-nis VAIR-ree-uh-GAH-tuh
Mesitornithidae meh-sit-or-NITH-uh-dee
Microeca fascians my-CROW-ek-uh FAS-sin-ans
Mimidae MIH-muh-dee
Mirafra javanica MIR-af-ruh jah-VAH-nik-uh
Mniotilta varia ny-OH-til-tuh VAIR-ee-uh
Moho bishopi MOH-hoh BISH-up-eye
Mohua ochrocephala MOH-hyoo-uh OH-kruh-SEFF-ah-luh
Momotidae moh-MOH-tuh-dee
Momotus momota MOH-moh-tuhs MOH-moh-tuh
Monarchidae mon-ARK-uh-dee
Montifringilla nivalis mon-tih-frin-JILL-uh NYE-val-is
Morus bassanus MOR-uhs BASS-an-uhs
Motacilla cinerea moh-tuh-SILL-uh sin-EAR-ee-uh
Motacillidae moh-tuh-SILL-uh-dee
Muscicapidae mus-kih-KAP-uh-dee

Muscicaps striata MUS-kih-kaps stry-AH-tuh
Musophagidae mus-oh-FAJ-uh-dee
Musophagiformes mus-oh-faj-uh-FORM-eez
Mycteria americana mik-TER-ee-uh uh-mer-uh-KAN-uh
Nectariniidae nek-tar-in-EYE-uh-dee
Neodrepanis coruscans nee-oh-DREH-pan-is KOR-us-kans
Neophron percnopterus NEE-oh-fron perk-NOP-ter-uhs
Nesomimus macdonaldi NEZ-oh-MIH-muhs mak-DON-uld-eye
Nonnula ruficapilla NON-nuh-luh roo-fih-kap-ILL-uh
Notharchus macrorhynchos NOTH-ark-uhs ma-crow-RIN-kuhs
Nothocercus bonapartei NOTH-uh-SER-kuhs BOH-nuh-PART-eye
Nucifraga caryocatactes NYOO-sih-FRAG-uh KAR-ee-oh-KAT-ak-teez
Numenius americanus nyoo-MEN-ee-uhs uh-mer-uh-KAN-uhs
Numida meleagris NYOO-mid-uh mel-ee-AY-gris
Numididae nyoo-MID-uh-dee
Nyctea scandiaca NIK-tee-uh skan-DEE-uh-kuh
Nyctibiidae nik-tih-BYE-uh-dee
Nyctibius griseus nik-TIB-ee-uhs GRIS-ee-uhs
Oceanites oceanicus OH-shih-NYE-teez OH-shih-AN-uh-kuhs
Odontophoridae OH-don-tuh-FOR-uh-dee
Opisthocomidae op-is-thuh-KOM-eh-dee
Opisthocomiformes op-is-thuh-kom-eh-FORM-eez
Opisthocomus hoazin op-is-thuh-KOM-uhs HOH-ah-sin
Oriolidae or-ih-OH-lu-dee
Oriolus oriolus or-ih-OH-luhs or-ih-OH-luhs
Ortalis vetula OR-tal-is VET-uh-luh
Orthonychidae or-thuh-NIK-uh-dee
Orthonyx temminckii OR-thon-iks TEM-ink-ee-eye
Otididae oh-TID-uh-dee
Otis tarda OH-tis TAR-duh
Otus asio OH-tuhs AS-ee-oh
Oxyruncidae ok-sih-RUN-kuh-dee
Oxyruncus cristatus OK-sih-RUN-kuhs KRIS-tah-tuhs
Pachycephala pectoralis pak-ih-SEFF-ah-luh pek-TOR-al-is
Pachycephalidae pak-ih-seff-AL-uh-dee

Pachyramphus aglaiae PAK-ih-RAM-fuhs ag-LAY-ee-ee
Pandion haliaetus PAN-die-on HAL-ee-ee-tuhs
Parabuteo unicinctus par-uh-BYOO-tee-oh YOO-nih-SINK-tuhs
Paradisaeidae par-uh-die-SEE-uh-dee
Pardalotidae par-duh-LOT-uh-dee
Pardalotus striatus par-duh-LOT-uhs stry-AH-tuhs
Paridae PAR-uh-dee
Parulidae par-YOOL-uh-dee
Parus major PAR-uhs MAY-jur
Passer domesticus PASS-er doh-MES-tuh-kuhs
Passerculus sandwichensis pass-ER-kyoo-luhs SAND-wich-en-sis
Passeridae pass-ER-uh-dee
Passeriformes pass-er-uh-FORM-eez
Pelecanidae pel-uh-KAN-uh-dee
Pelecaniformes pel-uh-kan-uh-FORM-eez
Pelecanoides urinatrix pel-uh-KAN-oi-deez yoor-in-AY-triks
Pelecanoididae pel-uh-kan-OI-duh-dee
Pelecanus erythrorhynchos pel-uh-KAN-uhs eh-RITH-roh-RIN-kuhs
Pelecanus occidentalis pel-uh-KAN-uhs ok-sih-DEN-tal-is
Pericrocotus igneus per-ih-CROW-kot-uhs IG-nee-uhs
Petroicidae pet-ROY-kuh-dee
Phacellodomus ruber fay-sell-uh-DOH-muhs ROO-ber
Phaethon lepturus FEE-thon LEPT-yoor-uhs
Phaethontidae fee-THON-tuh-dee
Phalacrocoracidae fal-uh-crow-kor-AY-suh-dee
Phalacrocorax carbo fal-uh-crow-cor-aks KAR-boh
Pharomachrus mocinno far-uh-MAK-ruhs MOH-sin-noh
Phasianidae fay-see-AN-uh-dee
Philepittidae fil-uh-PIT-tuh-dee
Phoenicopteridae FEE-nih-kop-TER-uh-dee
Phoenicopteriformes FEE-nih-KOP-ter-uh-FORM-eez
Phoenicopterus ruber FEE-nih-KOP-ter-uhs ROO-ber
Phoeniculidae FEE-nih-KYOO-luh-dee
Phoeniculus purpureus fee-NIH-kyoo-luhs purh-PURH-ee-uhs
Phyllastrephus scandens FIL-uh-STRE-fuhs SKAN-denz
Phylloscopus borealis FIL-uh-SKOH-puhs BOHR-ee-al-is
Phytotoma raimondii fye-toh-TOH-muh RAY-mund-ee-eye

Phytotomidae fye-toh-TOH-muh-dee
Picathartes oreas PIK-uh-THAR-teez OR-ee-uhs
Picoides borealis PIK-oy-deez BOHR-ee-al-is
Picidae PIS-uh-dee
Piciformes pis-uh-FORM-eez
Pinguinus impennis PIN-gwin-uhs IM-pen-is
Pipra filicauda PIP-ruh fil-eh-KAW-duh
Pipridae PIP-ruh-dee
Pitangus sulphuratus PIT-an-guhs sul-FUR-ah-tuhs
Pitohui kirhocephalus PIT-oo-ee kir-uh-SEFF-ah-luhs
Pitta angolensis PIT-tuh an-GOH-len-sis
Pitta sordida PIT-tuh SOR-dih-duh
Pittidae PIT-tuh-dee
Pityriasis gymnocephala pit-ih-RYE-uh-sis jim-nuh-SEFF-ah-luh
Plectoryncha lanceolata PLEK-tuh-RIN-kuh LAN-see-oh-LAH-tuh
Plectrophenax nivalis PLEK-troh-FEN-aks NYE-val-is
Ploceidae ploh-SEE-uh-dee
Ploceus cucullatus PLOH-see-uhs kyoo-KYOO-lah-tuhs
Ploceus philippinus PLOH-see-uhs fil-ih-PINE-uhs
Podargidae pod-AR-juh-dee
Podargus strigoides POD-ar-guhs STRI-goy-deez
Podiceps cristatus POD-ih-seps KRIS-tah-tuhs
Podicipedidae pod-ih-sih-PED-uh-dee
Podicipediformes pod-ih-sih-ped-uh-FORM-eez
Poecile atricapilla PEE-suh-lee ay-trih-kap-ILL-uh
Pogoniulus chrysoconus po-go-NYE-uh-luhs KRIS-oh-KON-uhs
Polioptila caerulea poh-lih-OP-til-uh see-ROO-lee-uh
Polyborus plancus pol-ih-BOHR-uhs PLAN-kuhs
Pomatostomidae poh-may-tuh-STOH-muh-dee
Pomatostomus temporalis poh-may-tuh-STOH-muhs tem-PER-al-is
Prionops plumatus PRY-on-ops PLOO-mah-tuhs
Procellariidae pro-sell-ar-EYE-uh-dee
Procellariiformes pro-sell-ar-eye-uh-FORM-eez
Promerops cafer PRO-mer-ops KAF-er
Prunella modularis proo-NELL-uh mod-YOO-lar-is
Prunellidae proo-NELL-uh-dee

Psaltriparus minimus sol-TRI-par-uhs MIN-ih-muhs
Psittacidae sit-UH-suh-dee
Psittaciformes sit-uh-suh-FORM-eez
Psittacula krameri sit-UH-kuh-luh KRAY-mer-eye
Psittacus erithacus SIT-uh-kuhs eh-RITH-uh-kuhs
Psittirostra cantans SIT-uh-ROS-truh KAN-tanz
Psophia crepitans SOH-fee-uh KREP-ih-tanz
Psophiidae soh-FYE-uh-dee
Pterocles namaqua TER-oh-kleez nah-MAH-kwuh
Pteroclididae ter-oh-KLID-uh-dee
Pterocliiformes ter-oh-cluh-FORM-eez
Pterocnemia pennata ter-ok-NEE-mee-uh PEN-ah-tuh
Ptilonorhynchidae TIL-on-oh-RIN-kuh-dee
Ptilonorhynchus violaceus TIL-on-oh-RIN-kuhs vee-o-LAY-see-uhs
Ptiloris victoriae TIL-or-is vik-TOR-ee-ee
Ptyonoprogne rupestris TY-on-oh-PROG-nee ROO-pes-tris
Puffinus puffinus PUFF-in-uhs PUFF-in-uhs
Pycnonotidae pik-noh-NOH-tuh-dee
Pycnonotus barbatus pik-noh-NOH-tuhs BAR-bat-uhs
Rallidae RALL-uh-dee
Ramphastidae ram-FAS-tuh-dee
Ramphastos toco RAM-fas-tuhs TOH-coh
Raphidae RAF-uh-dee
Raphus cucullatus RAF-uhs kyoo-KYOO-lah-tuhs
Recurvirostra americana re-CURV-ih-ROS-truh uh-mer-uh-KAN-uh
Recurvirostridae re-CURV-ih-ROS-truh-dee
Remizidae rem-IZ-uh-dee
Rhabdornis mysticalis RAB-dor-nis mis-TIH-kal-is
Rhabdornithidae rab-dor-NITH-uh-dee
Rheidae REE-uh-dee
Rhinocryptidae RYE-noh-KRIP-tuh-dee
Rhinoplax vigil RYE-noh-plaks VIH-jil
Rhipidura albicollis rip-ih-DYOOR-uh ahl-bih-KOLL-is
Rhipidura leucophrys rip-ih-DYOOR-uh LYOO-kuh-frees
Rhipiduridae rip-ih-DYOOR-uh-dee
Rhynochetidae rye-noh-KEE-tuh-dee
Rhynochetos jubatus rye-noh-KEE-tuhs JOO-bat-uhs
Rostratula benghalensis ros-TRAT-uh-luh ben-GOL-en-sis

Rostratulidae ros-trat-UH-luh-dee
Rupicola rupicola roo-pih-KOH-luh roo-pih-KOH-luh
 Sagittariidae saj-ih-tar-EYE-uh-dee
Sagittarius serpentarius saj-ih-TAR-ee-uhs ser-pen-TAR-ee-uhs
Sarcoramphus papa sar-KOH-ram-fuhs PAH-pah
Sarothrura elegans sar-oh-THROO-ruh EL-eh-ganz
Saxicola torquata sax-ih-KOH-luh TOR-kwah-tuh
Sayornis phoebe SAY-ro-nis FEE-bee
Schetba rufa SKET-buh ROO-fuh
 Scolopacidae skoh-loh-PAY-suh-dee
 Scopidae SKOH-puh-dee
Scopus umbretta SKOH-puhs UM-bret-tuh
Semnornis ramphastinus SEM-nor-nis ram-FAS-tin-uhs
Sialia sialis sigh-AL-ee-uh SIGH-al-is
Sitta canadensis SIT-tuh kan-uh-DEN-sis
Sitta europaea SIT-tuh yoor-uh-PEE-uh
 Sittidae SIT-tuh-dee
Smithornis capensis SMITH-or-nis KAP-en-sis
Somateria spectabilis soh-muh-TER-ee-uh spek-TAB-ih-lis
Sphecotheres vieilloti sfek-UH-ther-eez VYE-ill-oh-eye
 Spheniscidae sfen-IS-kuh-dee
 Sphenisciformes sfen-is-kuh-FORM-eez
Spheniscus magellanicus SFEN-is-kuhs maj-eh-LAN-ik-uhs
Sphyrapicus varius sfir-AP-ik-uhs VAIR-ee-uhs
Steatornis caripensis stee-AT-or-nis kar-IH-pen-sis
 Steatornithidae stee-at-or-NITH-uh-dee
Stercorarius parasiticus ster-koh-RARE-ee-uhs par-uh-SIT-ik-uhs
Stiltia isabella STILT-ee-uh IZ-uh-BELL-uh
 Strigidae STRIJ-uh-dee
 Strigiformes strij-uh-FORM-eez
Struthio camelus STROO-thee-oh KAM-el-uhs
 Struthionidae stroo-thee-ON-uh-dee
 Struthioniformes stroo-thee-on-uh-FORM-eez
 Sturnidae STURN-uh-dee
Sturnus vulgaris STURN-uhs VUL-gar-is
Sula nebouxii SUL-uh NEB-oo-ee-eye
 Sulidae SUL-uh-dee
 Sylviidae sil-VYE-uh-dee

Syrnhaptes paradoxus SIR-rap-teez PAR-uh-DOKS-uhs
Taeniopygia guttata tee-nee-uh-PIJ-ee-uh GUT-tah-tuh
Terpsiphone viridis terp-SIF-oh-nee VIR-id-is
Thamnophilus doliatus THAM-nuh-FIL-uhs dol-EE-ah-tuhs
 Thinocoridae thin-uh-KOR-uh-dee
Threskiornis aethiopicus THRES-kih-OR-nis EE-thi-OH-pi-kuhs
 Threskiornithidae thres-kih-or-NITH-uh-dee
 Timaliidae tim-al-EYE-uh-dee
 Tinamidae tin-AM-uh-dee
 Todidae TOH-duh-dee
Todus multicolor TOH-duhs MULL-tee-KUH-luhr
Tragopan satyra TRAG-uh-pan SAT-eye-ruh
Trichoglossus haematodus TRIK-uh-GLOS-uhs HEE-muh-TOH-duhs
 Trochilidae trok-ILL-uh-dee
Troglodytes aedon trog-luh-DIE-teez EE-don
Troglodytes troglodytes trog-luh-DIE-teez trog-luh-DIE-teez
 Troglodytidae trog-luh-DIE-tuh-dee
 Trogonidae troh-GON-uh-dee
 Trogoniformes troh-gon-uh-FORM-eez
 Turdidae TUR-duh-dee
Turdus migratorius TUR-duhs my-gruh-TOR-ee-uhs
 Turnicidae tur-NIS-uh-dee
Turnix sylvatica TUR-niks sil-VAT-ik-uh
Turnix varia TUR-niks VAIR-ee-uh
 Tyrannidae tie-RAN-uh-dee
Tyto alba TIE-toh AHL-buh
 Tytonidae tie-TON-uh-dee
Upupa epops UP-up-uh EE-pops
 Upupidae up-UP-uh-dee
Uria aalge YOOR-ee-uh AHL-jee
Vanellus vanellus vah-NELL-uhs vah-NELL-uhs
 Vangidae VAN-juh-dee
Vireo atricapillus VIR-e-oh ay-trih-kap-ILL-uhs
 Vireonidae vir-e-ON-uh-dee
Volatinia jacarina vol-uh-TIN-ee-uh jak-uh-REE-nuh
Zenaida macroura ZEN-ay-duh ma-crow-YOOR-uh
 Zosteropidae zos-ter-OP-uh-dee
Zosterops japonicus ZOS-ter-ops jap-ON-ik-uhs



Words to Know

A

Acacia: A thorny tree, or any of several trees, shrubs, or other plants of the legume family that tend to be ornamental.

Adaptation: Any structural, physiological, or behavioral trait that aids an organism's survival and ability to reproduce in its existing environment.

Adaptive evolution: Changes in organisms over time that allow them to cope more efficiently with their biomes.

Adaptive shift: An evolutionary process by which the descendants of an organism adapt, over time, to ecological niches, or natural lifestyles, that are new to that organism and usually filled in other places by much different organisms.

Aftershaft: The secondary feather that branches from the base of the main feather.

Algae: Tiny plants or plantlike organisms that grow in water and in damp places.

Alpine: Used to refer to the mountainous region of the Alps, or to describe other areas related to mountains.

Altitude: The height of something in relation to the earth's surface or sea level.

Altricial: Chicks that hatch at an early developmental stage, often blind and without feathers.

Anisodactyl: Toe arrangement with three toes pointing forward and one toe facing backward.

Anting: A behavior birds use to interact with ants, either by rolling in an ant hill or placing ants into their feathers.

Aphrodisiac: Anything that intensifies or arouses sexual desires.

Aquatic: Related to water.

Arachnid: Eight-legged animals, including spiders, scorpions, and mites.

Arboreal: Living primarily or entirely in trees and bushes.

Arthropod: A member of the largest single animal phylum, consisting of organisms with segmented bodies, jointed legs or wings, and exoskeletons.

Asynchronous hatching: A situation in which the eggs in a nest hatch at different times, so that some chicks (the older ones) are larger and stronger than others.

Australasia: Region consisting of Australia, New Zealand, New Guinea, and the neighboring islands of the South Pacific.

Avian: Relating to birds.

Aviary: Large enclosure or cage for birds.

B

Barb: Stiff filament that forms the framework of a feather.

Bib: Area under the bill of a bird, just above the breast.

Biodiversity: Abundance of species in a particular biome or geographical area.

Biparental: Both male and female of the species incubate, feed, and fledge their young.

Bower: Shady, leafy shelter or recess.

Brackish: Water that is a mix of freshwater and saltwater.

Bromeliads: A family of tropical plants. Many bromeliads grow high on the branches and trunks of trees rather than in the soil.

Brood: Young birds that are born and raised together.

Brood parasite: An animal species, most often a bird, in which the female lays its own eggs in the nests of other bird species. The host mother raises the chick as if it were her own. This behavior has also been observed in fish.

Brushland: Habitat characterized by a cover of bushes or shrubs.

Burrow: Tunnel or hole that an animal digs in the ground to use as a home.

C

Cache: A hidden supply area.

Camouflage: Device used by an animal, such as coloration, allowing it to blend in with the surroundings to avoid being seen by prey and predators.

Canopy: The uppermost layer of a forest formed naturally by the leaves and branches of trees and plants.

Cap: Patch on top of bird's head.

Carcass: The dead body of an animal. Vultures gather around a carcass to eat it.

Carnivore: Meat-eating organism.

Carion: Dead and decaying animal flesh.

Caruncle: A genetically controlled outgrowth of skin on an animal, usually for dominance or mating displays.

Casque: A horny growth on the head of a bird resembling a helmet.

Cavity: Hollow area within a body.

Churring: Referring to a low, trilled, or whirring sound that some birds make.

Circumpolar: Able to live at the North and South Pole.

Clutch: Group of eggs hatched together.

Collagen: A type of protein formed within an animal body that is assembled into various structures, most notably tendons.

Colony: A group of animals of the same type living together.

Comb: Fleshy red crest on top of the head.

Coniferous: Refers to evergreen trees, such as pines and firs, that bear cones and have needle-like leaves that are not shed all at once.

Coniferous forest: An evergreen forest where plants stay green all year.

Continental margin: A gently sloping ledge of a continent that is submerged in the ocean.

Convergence: In adaptive evolution, a process by which unrelated or only distantly related living things come to resemble one another in adapting to similar environments.

Cooperative breeding: A social organization of breeding where several birds (not just the parents) feed a group of hatchlings.

Courtship: Behaviors related to attracting a mate and preparing to breed.

Courtship display: Actions of a male and female animal that demonstrate their interest in becoming or remaining a pair for breeding.

Covert: Term derived from the word for something that is concealed, and used to describe the small feathers that cover the bases of the larger feathers on a bird's wing and tail.

Crèche: A group of young of the same species, which gather together in order to better avoid predators.

Crepuscular: Most active at dawn and dusk.

Crest: A group of feathers on the top or back of a bird's head.

Critically Endangered: A term used by the IUCN in reference to a species that is at an extremely high risk of extinction in the wild.

Crop: A pouch-like organ in the throat where crop milk is produced.

Crop milk: A cheesy, nutritious substance produced by adult pigeons and doves and fed to chicks.

Crown: Top of a bird's head.

Cryptic: To be colored so as to blend into the environment.

D

Deciduous: Shedding leaves at the end of the growing season.

Deciduous forest: A forest with four seasons in which trees drop their leaves in the fall.

Decurved: Down-curved; slightly bent.

Defensive posture: A position adopted to frighten away potential predators.

Deforestation: Those practices or processes that result in the change of forested lands to non-forest uses, such as human settlement or farming. This is often cited as one of the major causes of the enhanced greenhouse effect.

Distal: Away from the point of attachment.

Distraction display: Behaviors intended to distract potential predators from the nest site.

Diurnal: Refers to animals that are active during the day.

Domesticated: Tamed.

Dominant: The top male or female of a social group, sometimes called the alpha male or alpha female.

Dormant: Not active.

Dorsal: Located in the back.

Dung: Feces, or solid waste from an animal.

E

Ecological niche: The role a living creature, plant or animal, plays in its community.

Ecotourist: A person who visits a place in order to observe the plants and animals in the area while making minimal human impact on the natural environment.

Elevation: The height of land when measured from sea level.

Endangered: A term used by the U.S. Endangered Species Act of 1973 and by the IUCN in reference to a species that is facing a very high risk of extinction from all or a significant portion of its natural home.

Endemic: Native to or occurring only in a particular place.

Epiphyte: Plant such as mosses that grows on another plant but does not depend on that host plant for nutrition.

Estuary: Lower end of a river where ocean tides meet the river's current.

Eucalyptus: Tall, aromatic trees.

Evolve: To change slowly over time.

Extinct: A species without living members.

Extinction: The total disappearance of a species or the disappearance of a species from a given area.

Eyespot: Colored feathers on the body that resemble the eyes of a large animal, which function in helping to frighten away potential predators.

F

Family: A grouping of genera that share certain characteristics and appear to have evolved from the same ancestors.

Feather tract: Spacing of feathers in a pattern.

Feces: Solid body waste.

Fermentation: Chemical reaction in which enzymes break down complex organic compounds into simpler ones. This can make digestion easier.

Fledgling: Bird that has recently grown the feathers necessary to fly.

Flightless: Species that have lost the ability to fly.

Flock: A large group of birds of the same species.

Forage: To search for food.

Frugivore: Animal that primarily eats fruit. Many bats and birds are frugivores.

G

Gape: The width of the open mouth.

Genera: Plural of genus.

Generalist feeder: A species that eats a wide variety of foods.

Genus (pl. genera): A category of classification made up of species sharing similar characteristics.

Granivore: Animal that primarily eats seeds and grains.

Grassland: Region in which the climate is dry for long periods of the summer, and freezes in the winter. Grasslands are characterized by grasses and other erect herbs, usually without trees or shrubs, and occur in the dry temperate interiors of continents.

Gregarious: Used to describe birds that tend to live in flocks, and are very sociable with other birds. The word has come to be used to describe people who are very outgoing and sociable, as well.

H

Habitat: The area or region where a particular type of plant or animal lives and grows.

Hallux: The big toe, or first digit, on the part of the foot facing inwards.

Hatchling: Birds that have just hatched, or broken out of the egg.

Hawking: Hunting for food by sitting on a perch, flying out and capturing the food, and returning to the perch to eat.

Heath: Grassy and shrubby uncultivated land.

Herbivore: Plant eating organism.

Heterodactyl: With toes pointed in opposite directions; usually with first and second inner front toes turned backward and the third and fourth toes turned forward.

Homeotherm: Organism with stable independent body temperature.

Host: A living plant or animal from which a parasite takes nutrition

I

Igapó: Black waters of the Amazon river area.

Incubation: Process of sitting on and warming eggs in order for them to hatch.

Indicator species: A bird or animal whose presence reveals a specific environmental characteristic

Indigenous: Originating in a region or country.

Insectivore: An animal that eats primarily insects.

Introduced: Not native to the area; brought in by humans.
Invertebrate: Animal lacking a spinal column (backbone).
Iridescent: Having a lustrous or brilliant appearance or quality.
IUCN: Abbreviation for the International Union for Conservation of Nature and Natural Resources, now the World Conservation Union. A conservation organization of government agencies and nongovernmental organizations best known for its Red Lists of threatened an

K

Keel: A projection from a bone.
Keratin: Protein found in hair, nails, and skin.
Kleptoparasite: An individual that steals food or other resources from another individual.

L

Lamellae: Plural of lamella; comb-like bristles inside a flamingo's bill.
Larva (pl. larvae): Immature form (wormlike in insects; fishlike in amphibians) of an organism capable of surviving on its own. A larva does not resemble the parent and must go through metamorphosis, or change, to reach its adult stage.
Lek: An area where birds come to display courtship behaviors to attract a mate (noun); to sing, flutter, hop and perform other courtship behaviors at a lek (verb).
Lerp: Sugary lumps of secretions of psyllid insects, small plant-sucking insects living on Eucalyptus trees.
Lichen: A complex of algae and fungi found growing on trees, rocks, or other solid surfaces.
Litter: A layer of dead vegetation and other material covering the ground.

M

Mandible: Upper or lower part of a bird's bill; jaw.
Mangrove: Tropical coastal trees or shrubs that produce many supporting roots and that provide dense vegetation.
Mantle: Back, inner-wing, and shoulder area.
Mesic: Referring to any area that is known to be wet or moist.
Midstory: The level of tropical forests between ground level (understory) and treetops (overstory).

Migrate: To move from one area or climate to another as the seasons change, usually to find food or to mate..

Mixed-species flock: A flock of birds that includes multiple species.

Mobbing: A group of birds gathering together to defend themselves from another large bird by calling loudly and flying at the intruder.

Molt: The process by which an organism sheds its outermost layer of feathers, fur, skin, or exoskeleton.

Monogamous: Refers to a breeding system in which a male and a female mate only with each other during a breeding season or lifetime.

Montane forest: Forest found in mountainous areas.

Mutualism: A relationship between two species where both gain something and neither is harmed.

N

Nape: Back part of the neck.

Near Threatened: A category defined by the IUCN suggesting that a species could become threatened with extinction in the future.

Nectar: Sweet liquid secreted by the flowers of various plants to attract pollinators (animals that pollinate, or fertilize, the flowers).

Neotropical: Relating to a geographic area of plant and animal life east, south, and west of Mexico's central plateau that includes Central and South America and the West Indies.

Nest box: A small, human-made shelter intended as a nest site for birds. Usually a rectangular wooden box with a round entrance hole.

Nestling: Young bird unable to leave the nest.

New World: Made up of North America, Central America, and South America; the western half of the world.

Niche: A habitat with everything an animal needs.

Nictating membranes: Clear coverings under the eyelids that can be moved over the eye.

Nocturnal: Occuring or active at night.

O

Omnivore: A plant- and meat- eating animal.

Opportunistic feeder: One that is able to take advantage of whatever food resources become available.

Overstory: The level of tropical forests nearest treetops.

P

Paleartic: The area or subregion of Europe, Africa, and the Middle East, that is north of the Tropic of Cancer, and the area north of the Himalayas mountain range.

Pampas: Open grasslands of South America.

Parasite: An organism that lives in or on a host organism and that gets its nourishment from that host.

Pelagic: To live on the open ocean.

Permafrost: Permanently frozen lands.

Plain: Large expanse of land that is fairly dry and with few trees.

Plumage: Feathers of a bird.

Pneumatic: Air-filled cavities in the bones of birds.

Poisonous: Containing or producing toxic materials.

Pollen: Dust-like grains or particles produced by a plant that contain male sex cells.

Pollinate: To transfer pollen from the male organ to the female organ of a flower.

Polyandry: A mating system in which a single female mates with multiple males.

Polygamy: A mating system in which males and females mate with multiple partners.

Polygynous lek: A mating system in which several males display together for the attention of females. A female, after watching the displaying males, may mate with one or more males in the lek.

Polygyny: A mating system in which a single male mates with multiple females.

Precocial: Young that hatch at an advanced stage of development, with feathers and able to move.

Predator: An animal that eats other animals.

Preen: To clean and smooth feathers using the bill.

Preen gland: A gland on the rear of most birds which secretes an oil the birds use in grooming.

Prey: Organism hunted and eaten by a predator.

Primary forest: A forest characterized by a full-ceiling canopy formed by the branches of tall trees and several layers of smaller trees. This type of forest lacks ground vegetation because sunlight cannot penetrate through the canopy.

Promiscuity: Mating in which individuals mate with as many other individuals as they can or want to.

Pupae: Plural of pupa; developing insects inside cocoon.

Q

Quill: Hollow feather shaft.

R

Rainforest: An evergreen woodland of the tropics distinguished by a continuous leaf canopy and an average rainfall of about 100 inches (250 centimeters) per year.

Raptor: A bird of prey.

Regurgitate: Eject the contents of the stomach through the mouth; to vomit.

Resident: Bird species that do not migrate.

Retrices: Plural of retrix; paired flight feathers of the tail, which extend from the margins of a bird's tail.

Rictal bristles: Modified feathers composed mainly of the vertical shaft.

Riparian: Having to do with the edges of streams or rivers.

Riverine: Located near a river.

Roe: Fish eggs.

Roost: A place where animals, such as bats, sit or rest on a perch, branch, etc.

S

Savanna: A biome characterized by an extensive cover of grasses with scattered trees, usually transitioning between areas dominated by forests and those dominated by grasses and having alternating seasonal climates of precipitation and drought.

Scavenger: An animal that eats carrion.

Scrub forest: A forest with short trees and shrubs.

Secondary forest: A forest characterized by a less-developed canopy, smaller trees, and a dense ground vegetation found on the edges of forests.

Sedentary: Living in a fixed location, as with most plants, tunicates, sponges, etc. Contrast with motile.

Semi-precocial: To be born in a state between altricial and precocial. Semi-precocial chicks can usually leave the nest after a few days.

Sequential polyandry: A mating system in which a female mates with one male, leaves him a clutch of eggs to tend, and then mates with another male, repeating the process throughout the breeding season.

Serial monogamy: Mating for a single nesting then finding another mate or mates for other nestings.

Serrated: Having notches like a saw blade.

Sexual dichromatism: Difference in coloration between the sexes of a species.

Sexual dimorphism: Differences in size and in shapes of body or body parts between sexes of a species.

Sexually mature: Capable of reproducing.

Sheath: Tubular-shaped covering used to protect a body part.

Snag: A dead tree, still standing, with the top broken off.

Social: Species in which individuals are found with other individuals of the same species.

Solitary: Living alone or avoiding the company of others.

Specialist feeder: A species that eats only one or a few food items.

Species: A group of living things that share certain distinctive characteristics and can breed together in the wild.

Squab: Young pigeons and doves.

Steppe: Wide expanse of semiarid relatively level plains, found in cool climates and characterized by shrubs, grasses, and few trees.

Sternum: The breastbone.

Subalpine forest: Forest found at elevations between 9,190 and 10,500 feet (2,800 and 3,200 meters).

Sub-canopy: Below the treetops.

Subordinate: An individual that has lower rank than other, dominant, members of the group.

Subspecies: Divisions within a species based on significant differences and on genetics. Subspecies within a species look different from one another but are still genetically close to be considered separate species. In most cases, subspecies can interbreed and produce

Subtropical: Referring to large areas near the tropics that are not quite as warm as tropical areas.

Syndactyly: A condition in which two bones (or digits) fuse together to become a single bone.

Syrinx (pl. syrinxes): Vocal organ of birds.

T

Taiga: Subarctic wet evergreen forests.

Tail coverts: The short feathers bordering the quills of the long tail feathers of a bird. They may be over-tail or under-tail (i.e., top or bottom).

Tail streamer: A central part of a bird's tail that is longer than other parts.

Talon: A sharp hooked claw.

Taxonomy: The science dealing with the identification, naming, and classification of plants and animals.

Temperate: Areas with moderate temperatures in which the climate undergoes seasonal change in temperature and moisture. Temperate regions of the earth lie primarily between 30 and 60° latitude in both hemispheres.

Terrestrial: Relating to the land or living primarily on land.

Territorial: A pattern of behavior that causes an animal to stay in a limited area and/or to keep certain other animals of the same species (other than its mate, herd, or family group) out of the

Tetrapod: Any vertebrate having four legs or limbs, including mammals, birds, reptiles, and others.

Thermal: Rising bubble of warm air.

Thicket: An area represented by a thick, or dense, growth of shrubs, underbrush, or small trees.

Threat display: A set of characteristic motions used to communicate aggression and warning to other individuals of the same species.

Threatened: Describes a species that is threatened with extinction.

Torpor: A short period of inactivity characterized by an energy-saving, deep sleep-like state in which heart rate, respiratory rate and body temperature drop.

Tropical: The area between 23.5° north and south of the equator. This region has small daily and seasonal changes in temperature, but great seasonal changes in precipitation. Generally, a hot and humid climate that is completely or almost free of frost.

Tundra: A type of ecosystem dominated by lichens, mosses, grasses, and woody plants. It is found at high latitudes (arctic tundra) and high altitudes (alpine tundra). Arctic tundra is underlain by permafrost and usually very wet.

U

Understory: The trees and shrubs between the forest canopy and the ground cover.

V

Vertebra (pl. vertebrae): A component of the vertebral column, or backbone, found in vertebrates.

Vertebrate: An animal having a spinal column (backbone).

Vocalization: Sound made by vibration of the vocal tract.

Vulnerable: An IUCN category referring to a species that faces a high risk of extinction.

W

Wattle: A fold of skin, often brightly colored, that hangs from the throat area.

Wetlands: Areas that are wet or covered with water for at least part of the year and support aquatic plants, such as marshes, swamps, and bogs.

Wingbars: Stripes of coloration on the wing.

Wingspan: The distance from wingtip to wingtip when the wings are extended in flight.

X

Xeric forest: Forest adapted to very dry conditions.

Z

Zygodactyl: Two pairs of toes, with two toes pointing forward and two toes facing backward.



Getting to Know Birds

FEATHERS

It is easy to tell that an animal is a bird. If it has feathers, it is one of the more than 8,600 kinds of birds in the world. Birds can also be recognized by their bills, wings, and two legs, but feathers are what make them different from every other animal.

First feathers

Scientists are not sure when feathers first appeared on animals. They might have begun as feather-like scales on some of the dinosaurs. In 1861, fossils of a feathered animal, *Archaeopteryx* (ar-key-OP-tuh-rix), were found in Germany. These are the first animals known to scientists that were covered with feathers. These crow-sized animals with heads like lizards lived on the Earth about 150 million years ago.

How birds use different types of feathers

Feathers in most birds' wings and tail help them fly. Each of these flight feathers has a stiff shaft that goes from one end to the other. Flight feathers are light, but they are surprisingly strong. Birds that can fly can escape enemies and get to food sources and nesting places they wouldn't be able to walk to.

Feathers have many other uses in addition to flight. The outer feathers on a bird's body give it color and shape and help to waterproof the bird. Outer feathers with patterns are useful for camouflaging some birds, and colorful feathers send messages. For example, male birds show off their bright feathers to impress females or wave them as warnings to others. Downy inner feathers trap air to keep the bird warm.



Archaeopteryx is the first animal known to be covered with feathers. (© François Gohier/Photo Researchers, Inc. Reproduced by permission.)

Scientists have names for different types of feathers and also for groups of feathers according to where they grow on a bird's body.

Flight

Most birds' bodies are built for flight. Air sacs in their chests and hollow bones keep them light. They have powerful chest muscles that move their wings. The wing and tail feathers are tough, and birds can turn some of them for steering. A bird usually shuts its wing feathers to trap the air as its wings go down. This lifts the bird into the air and pushes it forward. Then, as it raises the wings, it fans the feathers open to let the air through.

How birds fly depends somewhat on the shape of their wings. Vultures and seabirds have long, narrow wings that are great for soaring high on air currents or gliding over the ocean. Songbirds have short, broad wings that are made for flapping as the birds fly among trees. Falcons have narrow, pointed wings that curve backward. These wings help them fly fast and steer well. But all birds flap their wings at times and glide at other times, depending on what they are doing and how the wind is blowing.

Some birds use their wings in unusual ways. Hummingbirds can flap their wings about fifty times every second. This allows them to hover at one spot as they lap nectar from flowers. Flipper-like wings help penguins to "fly" through the water, and even ostriches use their wings to keep their balance as they run.

The wing of a bird is rounded on top and flat on the bottom, similar to the wing of an airplane. This shape is what gives the bird the lift it needs to stay up in the air.

Birds take off and land facing the wind. Small birds (up to the size of pigeons) can jump up from the ground and fly right off into the air. Larger birds have to jump off something high or run along the ground or the water to get going.

BIRDS' BODIES

Different, but the same

A 400-pound (181-kilogram) ostrich may seem very different from a tiny bee hummingbird that weighs less than an ounce

(about 2 grams). But all birds have many things in common besides having feathers. They have bills, two legs, a backbone, they are warm-blooded (keep an even body temperature), and they lay hard-shelled eggs.

Body shapes

Birds have many different shapes. Wading birds such as flamingos have long necks and long legs. Eagles have short necks and legs. But both kinds of birds are able to find their food in the water. Falcons and penguins have sleek, torpedo-shaped bodies that are perfect for catching speedy prey. Turkeys' heavier bodies are just right for their quiet lives in the forest searching for acorns and insects.

Bill shapes

Bird bills come in a wide variety of shapes. They use their bills to gather food, build nests, fix their feathers, feed their young, attract mates, and attack their enemies. The type of food a bird eats depends on its bills' shape. For example, the sturdy bills of sparrows are good for cracking seeds, and hawks' hooked beaks are perfect for tearing up prey.

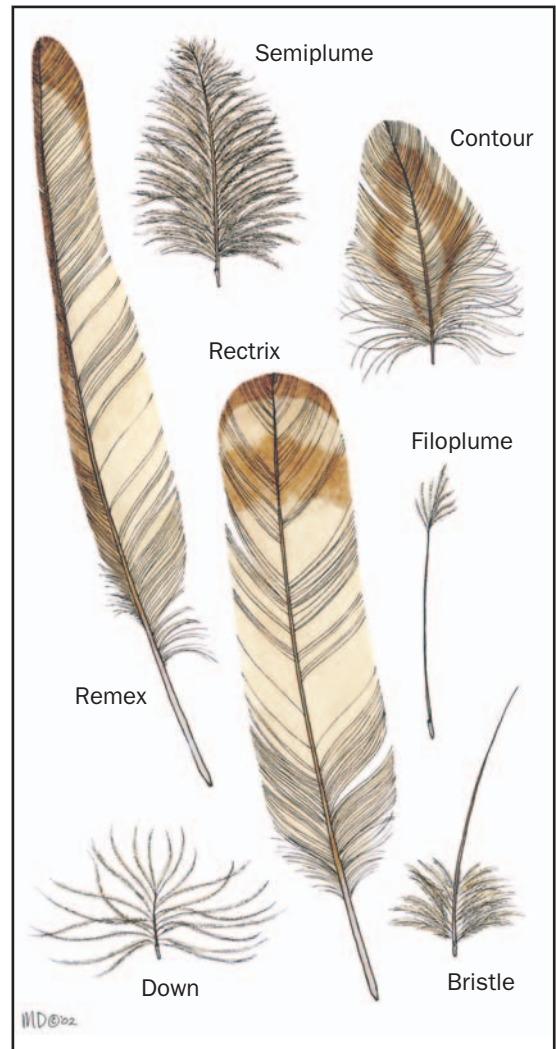
Legs and feet

Bird legs and feet fit their many different lifestyles. For example, hawks have sharp talons for hunting and ducks have webbed feet to help them swim. Some of the birds that spend most of their lives in the air or on the water are not good at walking. Most birds have four toes, but some have three, and ostriches have only two.

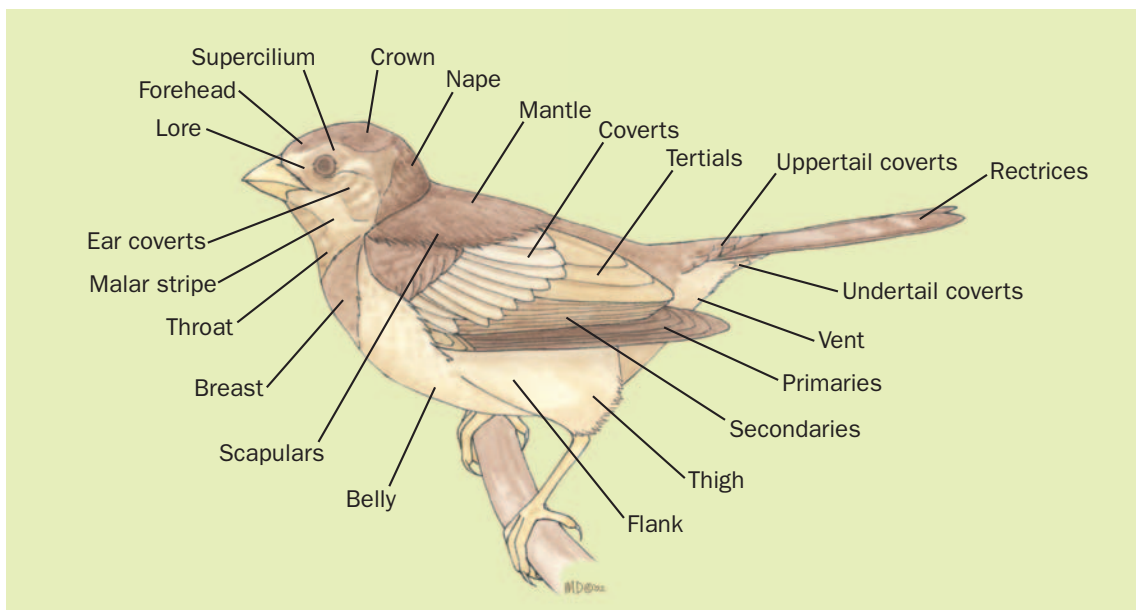
BIRDS' SENSES

Sight

For most birds, sight is their best sense. They can see much better than humans, and they can see in color, unlike many mammals.



A bird's stiffest feathers are the remex feathers of the wing and the rectrix feathers of the tail. The outside of a bird's body is covered with contour feathers that give the body shape and waterproof the bird. Underneath the contour feathers are the semiplume and down feathers that help keep the bird warm. Filoplumes lie alongside the contour feathers and help the bird tell if its feathers are in place. Some birds have bristles around their beaks that allow them to feel insects in the air. (Illustration by Marguette Dongvillo. Reproduced by permission.)



Scientists have names for groups of feathers according to where they grow on a bird's body. (Illustration by Marguette Dongvillo. Reproduced by permission.)

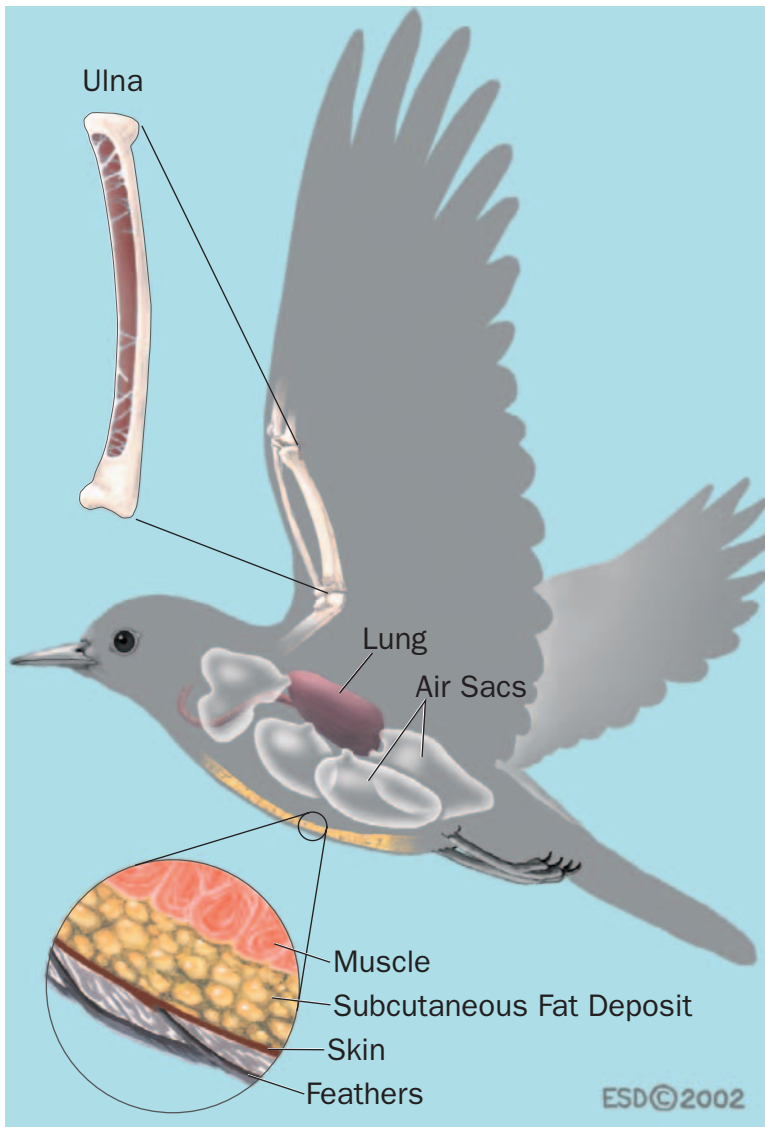
A bird's eyes are big and are usually set on the sides of its head. The eyes focus independently, so that the bird sees two different things at the same time. This gives the bird a very wide view and helps it to watch for predators in most directions. Most birds cannot roll their eyes, but they can turn their heads farther around than mammals can. Owls and other birds of prey have forward-facing eyes that usually work together. This helps them judge distance as they swoop down on prey.

Hearing

Birds have a good sense of hearing—they can hear about as well as mammals. The sound goes in through a little opening near each eye. The holes are usually covered with feathers. They lead to the bird's middle and inner ear, which are very sensitive to sounds. Because owls hunt at night, hearing is especially important to them. Some owls have a disc of stiff feathers on the face. The disc catches sounds, such as the squeaks of a mouse, and leads them to the ears.

Touch

Birds have many nerve endings, which shows that they have a good sense of touch. They can also feel pain, hot, and cold.



Birds' bodies have adaptations for flight, including air sacs in the chest and hollow bones to keep them light, and strong chest muscles. (Illustration by Emily Damstra. Reproduced by permission.)

Some long-billed birds have very sensitive bills and can feel their prey in muddy water.

Smell and taste

Most birds' sense of smell seems to be poorly developed. But kiwis, turkey vultures, and several other birds are able to find food by sniffing it. Although birds do not have many taste buds on their tongues, they can often taste well enough to avoid eating harmful foods.

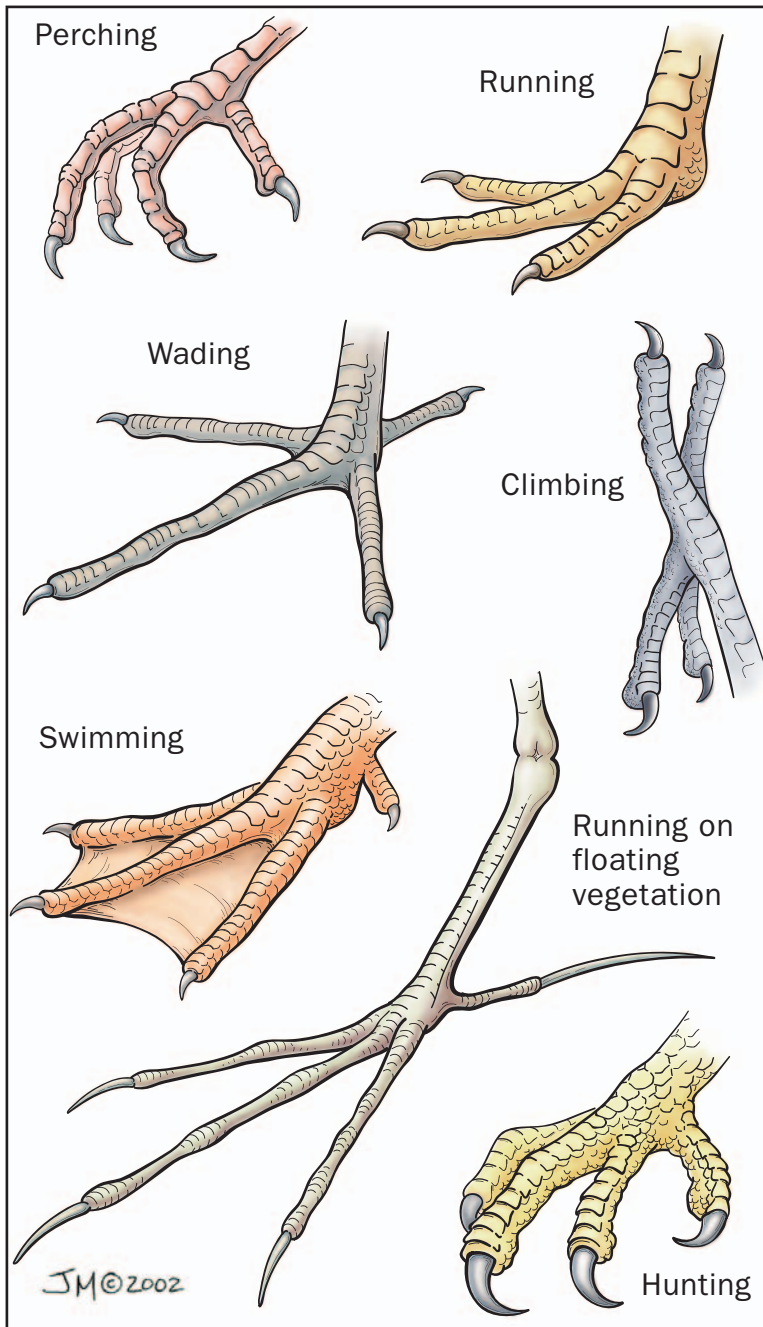


Bills are different shapes and sizes for different eating methods: 1. The greater flamingo filters microorganisms from water; 2. A peregrine falcon tears its prey; 3. Roseate spoonbills sift water for fish; 4. The Dalmatian pelican scoops fish in its pouch; 5. Anna's hummingbird sips nectar; 6. The brown kiwi probes the soil for invertebrates; 7. The green woodhoopoe probes bark for insects; 8. Rufous flycatchers catch insects; 9. Java sparrows eat seeds; 10. Papuan frogmouths catch insects; 11. The bicornis hornbill eats fruit; 12. American anhingas spear fish; 13. Rainbow lorikeets crack nuts. (Illustration by Jacqueline Mahannah. Reproduced by permission.)

WHAT'S INSIDE?

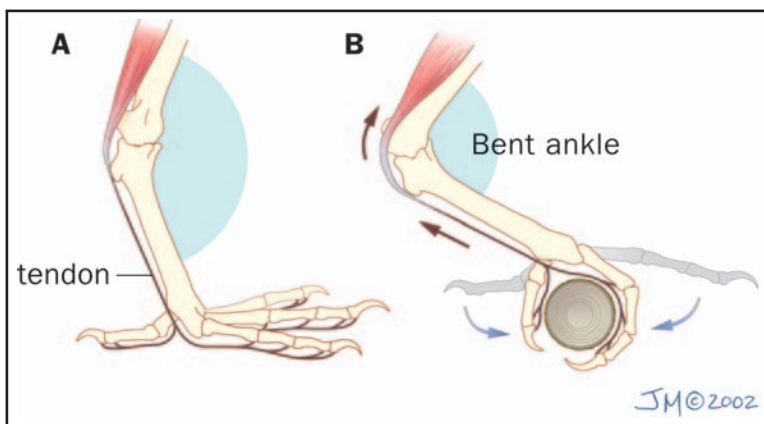
Organs and muscles

Birds have many of the same organs that humans have, but they have special features that help with flight and keep them light. Their biggest, strongest muscles control their wings. Birds



The number of toes, and the arrangement of their toes and feet fit birds' different lifestyles. (Illustration by Jacqueline Mahannah. Reproduced by permission.)

When a bird perches, its ankle bends and contracts (pulls together) the tendons in its foot, forcing its foot to close around the perch (B).
(Illustration by Jacqueline Mahannah. Reproduced by permission.)



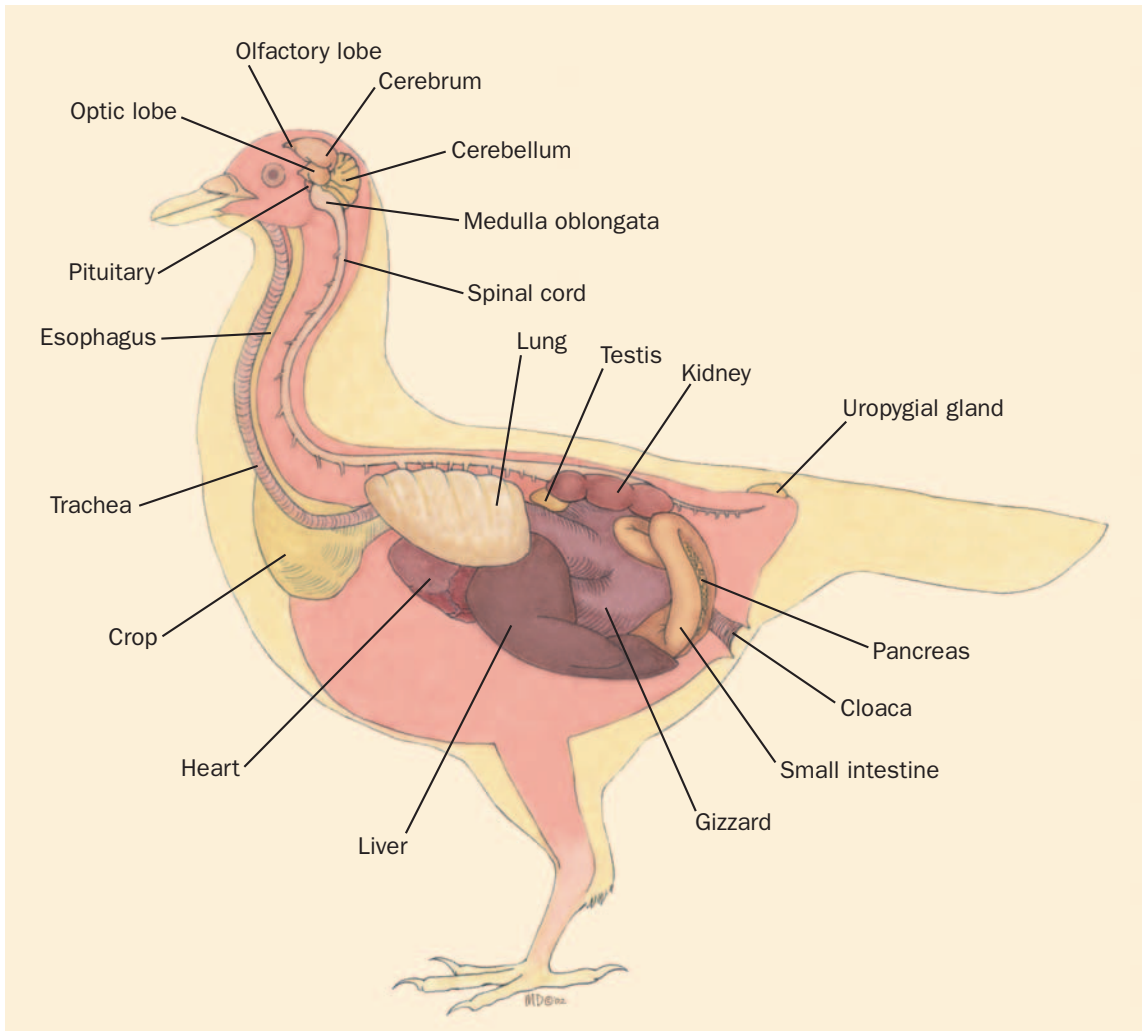
do not have a heavy jaw with teeth to grind their food. Instead, it is ground up in a muscular stomach called a gizzard, and they swallow gravel to help with the grinding. To get the energy they need for flight, birds digest their food quickly. Their fast digestion also keeps them from being weighed down for long by the food they have eaten.

Skeleton

A birds' skeleton is strong, even though it light. Many of the bones are hollow, and some of them are joined together to give the skeleton extra strength. (Loons and other diving birds have some solid bones to help the birds sink in the water.) The breastbone, or sternum, of a flying bird has a part called the keel. The bird's big flight muscles are attached to the keel. What looks like a backward-bending knee on a bird is really its ankle. The bird's knee is hidden high up inside its body feathers.

Body temperature

Birds are warm-blooded, which means their bodies stay at an even temperature no matter how warm or cold it is outside. They make their own heat from the food that they eat. Some birds cope with cold weather by growing extra feathers or a layer of fat, fluffing their feathers to trap more air, and huddling together with other birds. When birds can't find enough food to keep warm, they fly to warmer places. In hot weather, they cool down by panting, swimming in cool water, sitting in the shade, and raising their wings to catch a breeze.

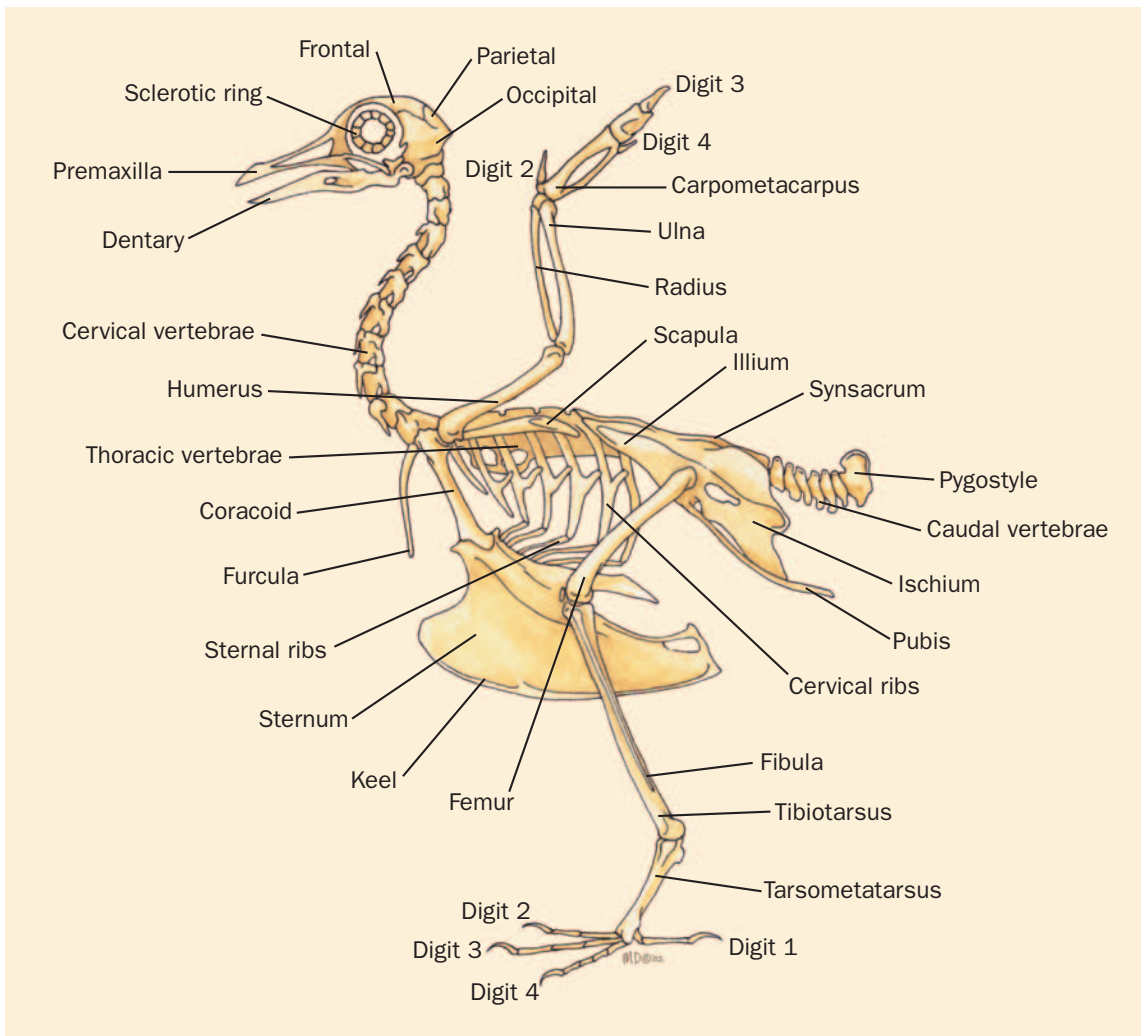


FAMILY LIFE

Singing

Singing is one of the most important ways that songbirds communicate. Birds do not sing just because they are happy. Instead, a male songbird sings to say that he “owns” a certain territory, and he warns birds of the same species to stay away. Songbirds do not have to see each other to know who is nearby. Birds can recognize the songs of their neighbors, because each bird of the same species sounds a little different. Male birds show off to females by singing the most complicated songs they can. Often the best singers are the strongest, healthiest males.

Though birds may look different on the outside, they have the same organs on the inside. (Illustration by Marguette Dongvillo. Reproduced by permission.)

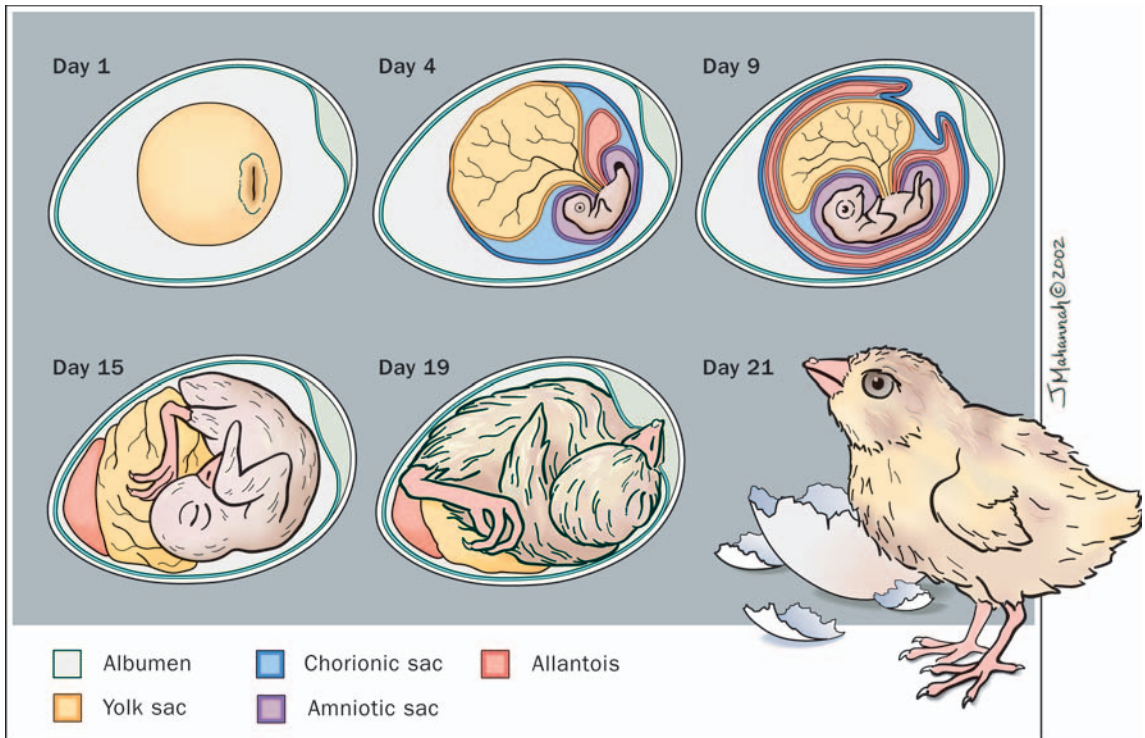


Birds have a strong, light skeleton. (Illustration by Marguette Dongvillo. Reproduced by permission.)

When a female songbird hears her mate singing, her brain tells her body to make hormones (special chemicals). These hormones make eggs start to grow inside her body.

Other ways birds communicate

Singing is just one of the many ways that birds communicate with each other. They have warning calls that tell other birds that a predator is nearby. They chirp to say, "I am here, where are you?" And young birds sometimes beg noisily to be fed. At breeding time, birds have a variety of courtships displays that ask, "Will you be mine?" and state, "We belong together." These include bowing, flight displays, and calling together. Male birds



parade and show off bright feathers or blow up colorful throat sacs to impress females.

Nests

When a bird has found a mate, it is nest-building time. Birds lay their hard-shelled eggs where they can be protected from predators and rain. There are many different kinds of nests. Some birds lay their eggs right on the ground or on the sides of cliffs, some use tree holes or burrows, and some weave complicated stick nests. A few kinds of birds even bury their eggs in mounds of soil and leaves.

Eggs and hatching

Eggs come in many different sizes and colors. Those laid on the ground usually have camouflage colors, and eggs laid in hidden places are often white. The female bird usually incubates the eggs (keeps them warm), especially if she has duller, harder-to-see feathers than the male. Sometimes males and females take turns, and occasionally the males incubate by themselves. Some birds, such as cowbirds, lay their eggs in the nests of other bird species and let the other birds incubate them.

An egg is a perfect package for the chick developing inside it. The albumen (egg white) and yolk provide all the food and water it needs, and are used up as the bird develops. Air moves in and out through hundreds of tiny holes in the shell. Waste from the developing chick is stored in a sac called the allantois (uh-LAN-tuh-wus). The chorionic (kor-ee-AHN-ik) sac lines the inside of the shell, and the amniotic sac surrounds the chick. Time spent in the egg is different for each species, but for this chick, feathers have started to grow by Day 15, and the chick begins making noises by Day 19. There is a little egg tooth on the tip of the chick's bill that it uses to break out of the shell on Day 21. (Illustration by Jacqueline Mahannah. Reproduced by permission.)

Growth of young birds

There are two main types of newly hatched birds. Young chickens, ducks, geese, turkeys, and ostriches are precocial (pre-KOH-shul). Precocial chicks are covered with down feathers and can run or swim after their parents soon after hatching. Before long, they learn to find their own food, but the parents usually protect them for a while longer. Altricial (al-TRISH-ul) birds are helpless when they hatch. Songbirds, seabirds, owls, parrots, and woodpeckers are some of the altricial birds. They are naked, blind, and weak, and they need to be fed by adults at least until they leave the nest.

HABITATS, HABITS, AND PEOPLE

Surviving in a habitat

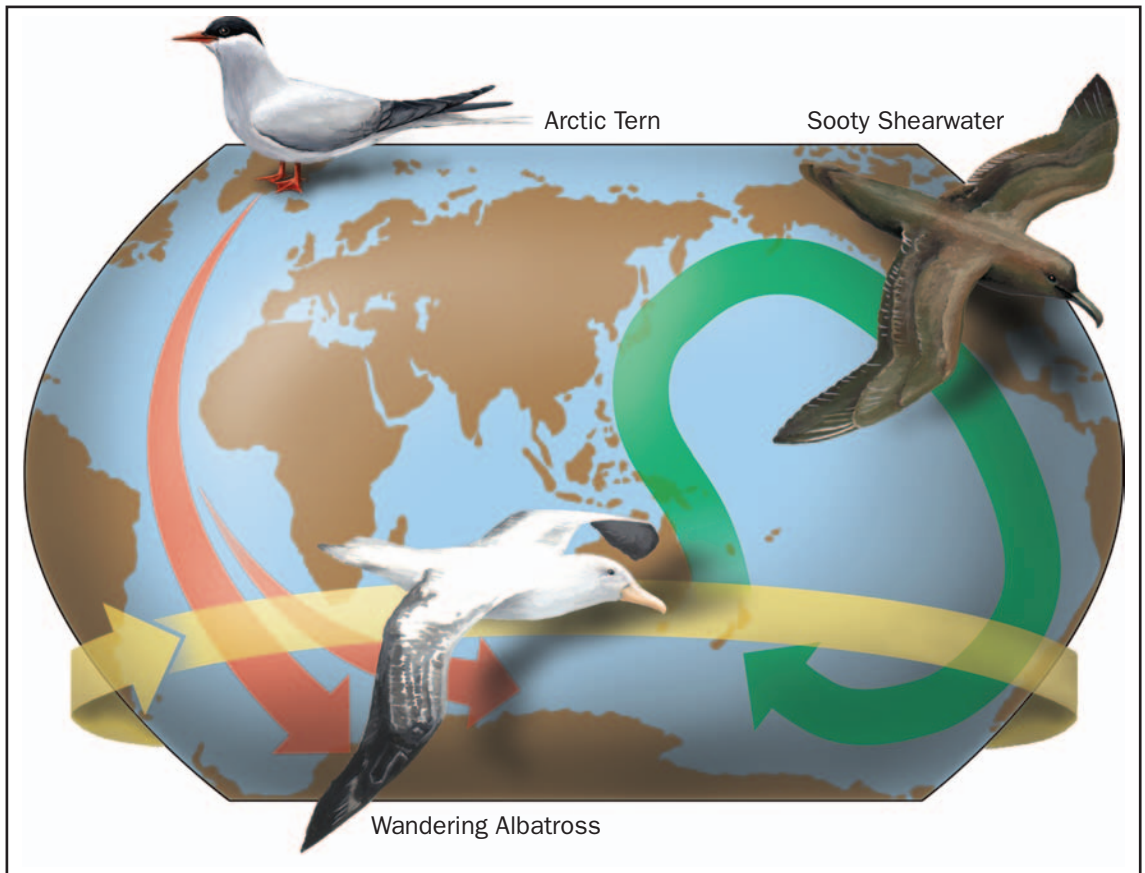
In order to live in a habitat, birds need food, water, and shelter (such as a hedge to hide in). At breeding time, they also need a place to raise their young. Many different kinds of birds can live in the same habitat because they eat different foods and nest in different places. Some birds, such as crows, can often adapt to changes in their habitat, but other birds are very particular and have to leave if something changes.

Staying alive and keeping fit

Birds have to have their feathers in flying shape at all times so that they can escape predators. Well-cared-for feathers are also necessary for keeping the birds warm and waterproof. Birds often have to stop what they are doing and take time out to fix their messed-up feathers. Sometimes they start with a bath. But they always finish by preening. To preen, the birds nibble along each feather to remove dirt and tiny pests. Most birds also get oil on their beaks from a gland near their tails. They spread the oil on each feather and straighten it by zipping it through their beaks. The oil keeps the feathers from drying out and waterproofs them. When a feather gets too worn, it either falls out or gets pushed out by a new feather growing in its place.

Migration

Migration is one way birds cope with natural changes in their habitats. When the weather gets cold and insects get scarce in fall, for example, insect-eating birds fly to warmer places where



they will be able to find the food they need. Their bodies are programmed to tell them that when the days start getting shorter, they have to eat more so they will have enough fuel for the journey. They follow the same migration routes year after year, and they know the general direction they should go and where to stop. The migrating birds are guided by the stars and by the direction the sun moves across the sky. Birds have a built-in compass and are able to follow magnetic fields in the earth. Some birds also rely on landmarks such as rivers and mountains to follow, and some may use sounds and smells to help them find their way.

Birds and people

Birds are some of the most visible wild animals on Earth, and they play an important part in people's lives. Humans

Seabirds have some of the longest migrations. The arctic tern migrates about 25,000 miles (40,000 kilometers) round-trip each year. The sooty shearwater breeds around New Zealand and the southern tip of South America and migrates in the spring to the northern Pacific and Atlantic Oceans. The wandering albatross moves around the Earth from west to east over the oceans south of the tips of the southern continents. (Illustration by Emily Damstra. Reproduced by permission.)

learned about flight from birds, they eat birds and their eggs, and they keep birds as pets. They appreciate the way birds eat insect pests and weed seeds, and they enjoy watching and listening to birds. Sometimes people kill the birds that eat fish or destroy their crops. People have also harmed birds unintentionally by polluting their habitats or turning them into farms and cities.

Humans now take the disappearance of birds from an area as a warning—there may be harmful poisons in the air or water. Many people are working hard to preserve natural places for birds and all wild animals. They are also having some success with fixing habitats that have been destroyed, but fixing them is much harder than preserving them in the first place.

FOR MORE INFORMATION

Books

Johnson, Jinny. *Children's Guide to Birds*. New York: Simon & Schuster, 1996.

MacKay, Barry Kent. *Bird Sounds*. Mechanicsburg, PA: Stackpole Books, 2001.

Markle, Sandra. *Outside and Inside Birds*. New York: Bradbury Press, 1994.

Perrins, Christopher M. *The Illustrated Encyclopedia of Birds*. New York: Prentice Hall Press, 1990.

Proctor, Noble S., and Patrick J. Lynch. *Manual of Ornithology, Avian Structure and Function*. New Haven, CT: Yale University Press, 1993.

Reid, Struan. *Bird World*. Brookfield, CT: The Millbrook Press, 1991.

Rupp, Rebecca. *Everything You Never Learned About Birds*. Pownal, VT: Storey Communications, Inc., 1995.

Sibley, David Allen, Chris Elphick, and John B. Dunning, Jr., eds. *National Audubon Society: The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, 2001.

Taylor, Kim. *Flight*. New York: John Wiley & sons, Inc., 1992.

Periodicals

Able, Kenneth P. "The Concepts and Terminology of Bird Navigation." *Journal of Aviation Biology* 32 (2000): 174–182.

- Berger, Cynthia. "Fluffy, Fancy, Fantastic Feathers." *Ranger Rick* (January 2001): 2–10.
- Greij, Eldon. "Happy Returns: Landing Safely Is Every Bit as Tricky as Flying." *Birders World* (February 2003): 58–60.
- Kerlinger, Paul. "How High? How High a Bird Flies Depends on the Weather, the Time of Day, Whether Land or Water Lies Below—and the Bird." *Birder's World* (February 2003): 62–65.
- Miller, Claire. "Guess Where They Nest." *Ranger Rick* (March 1996): 19–27.
- Pennisi, Elizabeth. "Colorful Males Flaunt Their Health." *Science* (April 4, 2003): 29–30.

Web sites

- "Act for the Environment." National Wildlife Federation. <http://www.nwf.org/action/> (accessed on May 3, 2004).
- "All About Birds." Cornell Lab of Ornithology. <http://www.birds.cornell.edu/programs/AllAboutBirds/> (accessed on May 3, 2004).
- American Bird Conservancy. <http://www.abcbirds.org> (accessed on May 3, 2004).
- American Ornithologists' Union. <http://www.aou.org> (accessed on May 3, 2004).
- "Bird and Wildlife Information Center." National Audubon Society. <http://www.audubon.org/educate/expert/index.html> (accessed on May 3, 2004).
- BirdLife International. <http://www.birdlife.net> (accessed on May 3, 2004).
- "Birdlife Worldwide." Birdlife International. <http://www.birdlife.net/worldwide/index.html> (accessed on May 3, 2004).
- National Audubon Society. <http://www.Audubon.org> (accessed on May 3, 2004).
- National Wildlife Federation. <http://www.nwf.org> (accessed on May 3, 2004).
- The Nature Conservancy. <http://nature.org> (accessed on May 3, 2004).

order

CHAPTER

TINAMOUS AND RATITES

Struthioniformes

Class: Aves

Order: Struthioniformes

Number of families: 6 families

PHYSICAL CHARACTERISTICS

Struthioniformes are divided into two groups: ratites (RAT-ites), which are flightless birds that have a flat breastbone rather than a keeled breastbone (shaped like a wishbone) like birds of flight; and tinamous (TIN-ah-mooz), which have a keeled breastbone and can fly. Ratites have a simplified wing bone structure, strong legs, and no feather vanes, making it unnecessary to oil the feathers. Consequently, they have no preen gland that contains preening oil. This group is composed of ostriches (Struthionidae), rhea (Rheidae), cassowaries (Casuariidae), emus (Dromaiidae), and kiwis (Apterygidae).

Ratite sizes range from 10 inches (25 centimeters) to 9 feet (2.7 meters) and weight can be from 2.86 pounds (1.3 kilograms) to 345 pounds (155.25 kilograms).

Ostriches are the largest struthioniforms (members of the Struthioniformes order), with long legs and neck. They range in height from 5.7 to 9 feet (1.8 to 2.7 meters) and weigh from 139 to 345 pounds (63 to 157 kilograms). They have loose-feathered wings. Males have black and white feathers while the female has grayish brown feathers.

Emus are about 6.5 feet in height and weigh 51 to 120 pounds (23 to 55 kilograms). They have long, strong legs and can run up to 30 miles per hour (48 kilometers per hour). They have short wings and the adults have brown feathers.

Rheas are 4.5 to 5.6 feet (1.3 to 1.7 meters) and weigh 55 to 88 pounds (24.75 to 40 kilograms). Their feathers are gray or spotted brown and white.

phylum

class

subclass

● **order**

monotypic order

suborder

family

Cassowaries are 3.3 to 5.6 feet (1 to 1.7 meters) in height and weigh 30 to 130 pounds (14 to 59 kilograms). They have tiny wings with black feathers.

Kiwis are the smallest of ratites, ranging in height from 14 to 22 inches (35 to 55 centimeters) and weight 2.6 to 8.6 pounds (1.2 to 3.9 kilograms). They have brown and black hair-like feathers.

The tinamous have a keeled breastbone (shaped like a wish-bone) and can fly. They range in size from 8 to 21 inches (20 to 53 centimeters) and weigh 1.4 ounces to 5 pounds (43 grams to 2.3 kilograms).

GEOGRAPHIC RANGE

Ostriches are found in parts of central and southern Africa. Emus are distributed in several small areas of Australia. Kiwis are found in New Zealand. Rheas are distributed in Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay. Cassowaries are found in northern Australia, New Guinea, and surrounding islands. Tinamous are found in southern Mexico and throughout Central and South America.

HABITAT

Habitat varies between families. Ratites live in grasslands, eucalyptus forests, woodlands, alpine plains, subtropical and temperate forests, coastal areas, shrubland, desert, and rainforests. Tinamous live in rainforests, deciduous forests, woodlands, grasslands, and croplands.

DIET

Largely herbivores (plant eaters), ratites and tinamous eat mostly plants, fruits, seeds, and flowers although several families also eat insects, snails, and earthworms.

BEHAVIOR AND REPRODUCTION

Ratites and tinamous are diurnal, meaning they are most active during the day. The exception is the kiwi, which is nocturnal, meaning it is most active at night. Behavior and reproduction varies between families. All lay eggs in nests but there the similarities end. In tinamous, rheas, cassowaries, kiwis, and emus, the males incubate (sit on to keep warm) the eggs and raise the young chicks. In ostriches, the males sit on the eggs at night and the females during the day.

Ostriches are the largest living birds and live in flocks, families, and individually. They are diurnal, meaning that they are most active during the day. Ostriches can run at speeds of up to 45 miles per hour (70 kilometers per hour). Males are polygamous (puh-LIH-guh-mus), meaning they take more than one mate at a time. Ostriches have an average of thirteen eggs per nest, and a number of females will lay their eggs in a single nest. The eggs take about forty-two days to hatch. On average, only one chick per nest will survive to adulthood.

Emus are the largest bird native to Australia. They live in pairs and are nomadic, following the rain to feed. The female lays a large, thick-shelled, dark green egg. When a nest has about eight to ten eggs, the male incubates them, meaning he sits on the eggs to keep them warm until they hatch.

Kiwis are shy, night birds with a keen sense of smell. They pair up for life and are monogamous (muh-NAH-guh-mus), meaning they have a sexual relationship with only one partner. The female usually digs a nest in the ground where she lays one or two large eggs, weighing about 1 pound (0.45 kilogram) each.

Rheas are the largest birds in South America. They are polygamous. During breeding season, the male rhea builds a nest in which between two and fifteen females lay their eggs. Nests contain ten to sixty eggs. The male cares for the chicks for about thirty-six hours after they hatch.

Cassowaries are solitary birds except during mating and the egg-laying period. Although they do not fly, they are good swimmers and fast runners. The female lays three to eight large dark bright green eggs in a nest that is incubated by the male. He cares for the chicks for nine months after they hatch.

Tinamous are one of the oldest families of birds. They are very shy and are rarely seen by humans. The male builds a nest and two or more females lay eggs in it. The male incubates the eggs and soon after they hatch and leave the nest, he signals for new females to lay eggs.



BIG BIRD

A ratite known as the elephant bird (family Aepyornithidae) of Madagascar was the largest bird known to exist. It reached a height of 10 feet (3 meters) and weighed up to 880 pounds (400 kilograms). Seven species of the elephant bird once existed and two survived into the first century. All are now extinct. The last species to survive was *Aepyornis maximus*, which became extinct around the year 1600 C.E. One egg of the elephant bird was so large it would take 150 chicken eggs to fill it.

TINAMOUS, RATITES, AND PEOPLE

Ratites are raised by humans for their meat and feathers. Their eggs are used as food and as decoration. Tinamous are hunted in the wild by humans for their meat.

CONSERVATION STATUS

Two Struthioniformes species are listed by the World Conservation Union (IUCN) as Critically Endangered, facing an extremely high risk of extinction. Nine species are listed by as Vulnerable, facing a high risk of extinction. One species is Endangered, facing a very high risk of extinction and four species are listed as Near Threatened, in danger of becoming threatened.

FOR MORE INFORMATION

Books:

Davies, S. J. J. F., et al., eds. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann, and John B. Wexo. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries* (Zoo Books). Mankato, MN: Creative Education, 2000.

Fowler, Allan. *These Birds Can't Fly*. New York: Bt Bound, 2001.

Harris, Timothy. *Ostriches, Rheas, Cassowaries, Emus, and Kiwis*. New York: Beech Publishing House, 1997.

Sinclair, Ian, et al. *Birds of Southern Africa*. Princeton, NJ: Princeton University Press, 2002.

Periodicals:

Owen, James. "Does Rain Forest Bird 'Boom' Like a Dinosaur?" *National Geographic News* (November 4, 2003).

Roach, John. "Female Moa Bird Liked the Little Guys, Studies Suggest." *National Geographic News* (September 11, 2003).

Wiley, C. B. "Dinosaurs to Ratites in Only 250 Million Years." *Live Animal Trade & Transport Magazine* (June 1993): 5-16.

Web sites:

American Ostrich Association. <http://www.ostriches.org> (accessed on July 13, 2004).

family CHAPTER

TINAMOUS Tinamidae

Class: Aves

Order: Struthioniformes

Family: Tinamidae

Number of species: 47 species

PHYSICAL CHARACTERISTICS

Tinamous (TIN-ah-mooz) range in size from 8 to 21 inches (20 to 53 centimeters) and weight from 1.4 ounces to 5 pounds (43 grams to 2.3 kilograms). They have a compact body, thin neck, a small head with a beak that curves slightly downward, short wings and tail, and fly infrequently. They have thick, medium-length legs with three toes pointing forward and one pointing backward. They also have a preen gland that secretes an oil they use for grooming.

Tinamous are various shades of gray or brown, with streaky, barred, or mottled patterns. Their coloring is cryptic, meaning it helps them blend in with their surroundings. This makes them harder to be detected by predators, including humans, foxes, armadillos, and skunks. Females are generally larger than males and have somewhat brighter feather coloring.

GEOGRAPHIC RANGE

Tinamous are found in southern Mexico and throughout Central and South America, including Argentina, Bolivia, Brazil, Belize, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guyana, Guatemala, French Guiana, Honduras, Nicaragua, Panama, Paraguay, Peru, Surinam, Uruguay, and Venezuela.

HABITAT

Tinamous occupy a wide variety of habitats. Some species live in tropical rainforests, others in bush woodlands and the edges of forests. Several live in arid or semiarid grass-covered

phylum

class

subclass

order

monotypic order

suborder

▲ family

treeless plains or grasslands. Several species live in the alpine tundra of the Andes Mountains.

DIET

Tinamous eat a mostly herbivorous (consists of plants) diet consisting of seeds, roots, fruits, berries, tender leaves, and flowers. They also on occasion will eat insects and their larvae (LAR-vee), spiders, termites, ticks, worms, snails, and slugs. Several species will eat small vertebrate animals, those with a backbone, such as lizards, frogs, and mice.

BEHAVIOR AND REPRODUCTION

Tinamous are one of the oldest families of birds. They are diurnal, meaning they are most active during the day. They are very shy and are rarely seen by humans. When approached, they hide in ground cover or heavy brush. Although they can fly, they rarely do, preferring to spend most of their time on the ground. They walk and run quickly. Most species roost, or sleep, on the ground, although a few sleep in trees.

When a tinamou feels threatened, it will stand or crouch motionlessly, or walk into heavy brush. When frightened, they will beat their wings and make a loud crowing or barking noise. As a last resort, they will fly low and for a short distance.

Most tinamous are polygamous (puh-LIH-guh-mus), meaning they take more than one mate during a breeding season. The exception is the ornate tinamou, of which a single male and female pair off. For some species, the breeding season is year-round. For others, it is only during a four-month time period each year. At the start of the breeding season, a male will establish its territory and build a nest by digging a shallow hole in the ground, usually among trees or grasses.

The male will call out to attract females. Usually, two or more females will respond and lay eggs in the nest. The male incubates (keeps warm until hatching) the eggs for seventeen to twenty-one days. A few days after they hatch, the chicks leave the nest and the male signals for new females to lay eggs. Tinamou eggs are among the most beautiful of all birds, coming in a variety of deep, shiny, solid colors, including red, brown, black, gray, olive, purple, sky blue, and bright green.

Nesting habits are not uniform among tinamou. The male variegated tinamou incubates a single egg while the male ornate tinamou incubates four to nine eggs from a single female.

The ornate tinamou female aggressively defends the breeding territory, a task done by males in other tinamou species.

The two most common species of tinamou are the variegated tinamou and the crested tinamou (also commonly known as the elegant crested or Martineta tinamou). They live throughout the open grasslands, or pampas, of South America. The Chilean tinamou lives in the tundra-like areas of the southern Andes Mountains in southern South America. It was introduced to Easter Island in the South Pacific in the late nineteenth century, where it still thrives today.

Tinamous were imported into Europe and Canada in the early 1900s and raised as game birds, but domestication was not successful.

TINAMOUS AND PEOPLE

Tinamous are hunted by humans for their meat, which is said to be tender and flavorful. Because of this excessive hunting, coupled with destruction of its habitat, tinamou populations are declining.

CONSERVATION STATUS

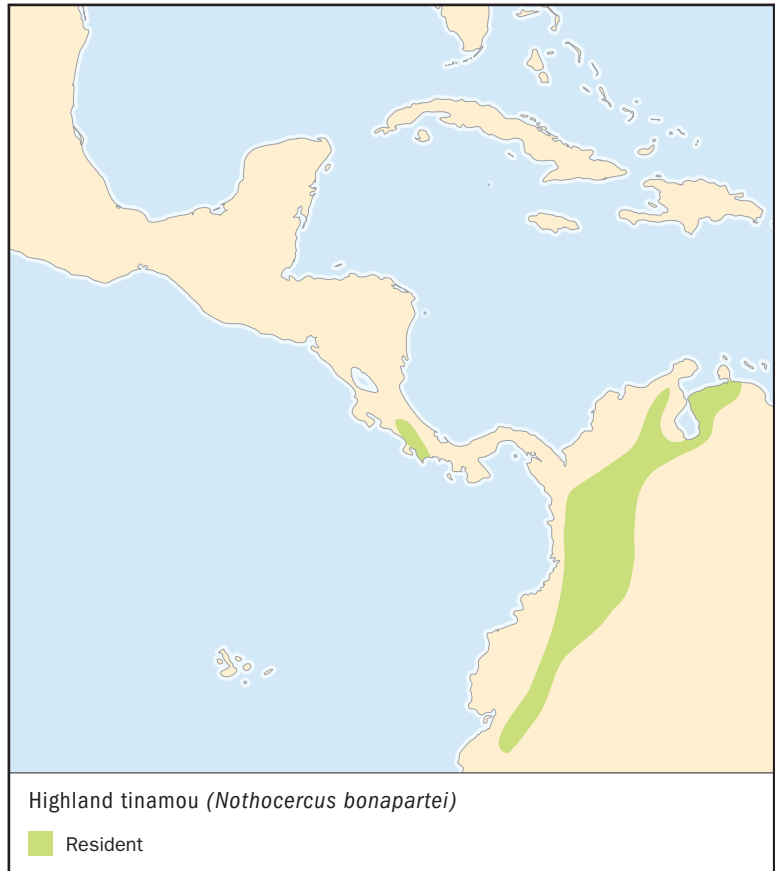
Two species of tinamou are listed by the World Conservation Union (IUCN) as Critically Endangered, facing an extremely high risk of extinction: the Magdalena tinamou and Kalinowski's tinamou. Four species are listed as Vulnerable, facing a high risk of extinction: the black tinamou, dwarf tinamou, Taczanowski's tinamou, and Choco tinamou. Four species are listed as Near Threatened, in danger of becoming threatened: the solitary tinamou, pale-browed tinamou, yellow-legged tinamou, and Colombian tinamou.



HATES TO FLY

The closest living relatives to tinamous are ratites, a group of flightless birds that includes the ostrich. Tinamous have small wings and can make only short flights. Their tail, important in steering while flying, is extremely short. This causes them to often lose control on takeoff and fly into obstacles. They only fly when they feel they are in immediate danger.

SPECIES ACCOUNT



HIGHLAND TINAMOU *Nothocercus bonapartei*

Physical characteristics: The highland tinamou is 15 inches (38.5 centimeters) long and weighs 2 pounds (0.9 kilograms). Its coloring is mottled (spotted) or barred with black and cinnamon on its back and wings. Its throat is usually rust-colored.

Geographic range: Highland tinamous live in Colombia, Costa Rica, Ecuador, Panama, Peru, and Venezuela.

Habitat: This tinamou lives in tropical and subtropical rainforests, usually above 5,000 feet (1,500 meters). The highland tinamou prefers wet areas, especially ones with bamboo thickets.



The male highland tinamou sits on the eggs until they hatch. (Michael P.L. Fogden/Bruce Coleman Inc. Reproduced by permission.)

Diet: The highland tinamou eats mainly fruits and small animals and reptiles, such as lizards, frogs, and mice.

Behavior and reproduction: The male highland tinamou makes a rough and hollow-sounding crowing or barking call that can be heard for several miles (several kilometers). He makes the sound repeatedly while in his home territory. The male defends his territory and attracts a harem of three females with his calls. He builds a nest in dense vegetation where the females each lay three eggs. The male sits on the nine eggs until they hatch. He usually leaves the nest no more than once a day to look for food.

Highland tinamous and people: The highland tinamou is hunted by humans for its meat. As a result, populations are declining in Peru and Costa Rica.

Conservation status: The highland tinamou is not considered threatened by the IUCN. ■

FOR MORE INFORMATION

Books:

Clements, James F. *Birds of the World: A Checklist*. Vista, CA: Ibis Publishing Company, 2000.

Davies, S. J. J. F., et al. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae* Oxford, U.K.: Oxford University Press, 2002.

De la Pena, Martin R., and Maurice Rumboll. *Birds of Southern South America and Antarctica*. Princeton, NJ: Princeton University Press, 1998.

Feduccia, A. *The Origin and Evolution of Birds*, 2nd ed. New Haven, CT: Yale University Press, 1999.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Checkmark Books, 1985.

Sibley, David Allen. *The Sibley Guide to Birds*. New York: Knopf, 2000.

Web sites:

Howard, Laura. "Tinamiformes." Animal Diversity Web. <http://animal-diversity.ummz.umich.edu/site/accounts/information/Tinamiformes.html> (accessed May 3, 2004).

family CHAPTER

RHEAS Rheidae

Class: Aves

Order: Struthioniformes

Family: Rheidae

Number of species: 2 species

PHYSICAL CHARACTERISTICS

Rheas are similar in general appearance to the ostrich, except for the fact that they are smaller and do not have the large tail feather plumes of ostriches. Rheas are 4.5 to 5.6 feet (1.3 to 1.7 meters) tall from their feet to the top of their back and weigh 55 to 88 pounds (24.75 to 40 kilograms). Their head, neck, and bodies are covered with soft, loose feathers that are gray or spotted brown and white.

They have long legs with three toes and wings with a claw on the end, an effective weapon against predators. Males are larger than females and the lesser rhea is smaller than the greater rhea.

GEOGRAPHIC RANGE

Rheas are distributed in Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay.

HABITAT

Rheas live almost exclusively on grassland although two subspecies of the lesser rhea also inhabit desert areas.

DIET

Rheas are omnivores, meaning that they eat both plants and meat. Their diet consists mainly of grass, leaves, herbs, fruit, and seeds, as well as lizards, insects, and small animals.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**



RED MEAT WITH FEATHERS

Rheas are raised commercially in the United States for their meat. However, although rheas are poultry, their meat is classified as red rather than white. Raw rhea meat is a dark cherry red. After it's cooked, it looks and tastes similar to beef, except it is a little sweeter. Rhea meat is sold as steaks, fillets, medallions (small coin-shaped pieces of meat), roasts, and ground meat. Rhea meat is lower in cholesterol and fat than beef and lower in calories than beef, chicken, and turkey, according to the United States Department of Agriculture (USDA). In 2002, the USDA instituted mandatory inspection of rhea meat in places where the birds are slaughtered.

BEHAVIOR AND REPRODUCTION

Rheas are the largest birds in South America. They are extremely friendly and sociable. In the non-breeding season, the lesser rhea usually live in flocks of five to thirty birds, while the greater rhea live in flocks of ten to one hundred individuals. They are often found grazing alongside herbivorous (plant eating) mammals, such as deer and alpacas. They are fast runners and can reach speeds of up to 37 miles (60 kilometers) per hour, usually running in a zig-zag pattern.

Rheas belong to a group of birds called ratites, which are flightless birds that have a flat breastbone rather than a keeled, or curved breastbone like birds of flight. They have a simplified wing bone structure, strong legs, and no feather vanes, making it unnecessary to oil the feathers.

They are polygamous (puh-LIH-guh-mus), meaning they have more than one mate during the breeding season. During breeding season, the male rhea builds a nest in which between two and fifteen females lay their

eggs. Nests contain ten to sixty eggs. The male cares for the chicks for about thirty-six hours after they hatch.

During the winter, the flocks split into three groups: single adult males, flocks of two to fifteen females, and yearlings two-years-old and younger. Males challenge each other and try to attract females. This behavior intensifies as the spring and summer breeding season approaches.

RHEAS AND PEOPLE

Rheas are hunted in the wild by humans for their meat, skin, and feathers. They are raised commercially on farms in the United States and Canada for their meat. They are considered agricultural pests by farmers because they will eat almost any crop.

CONSERVATION STATUS

The greater rhea and lesser rhea are listed by the IUCN as Near Threatened, meaning they are in danger of becoming threatened. Their populations are declining throughout their range, because much of their habitat is shrinking due to conversion to farmland. The Puna rhea, a subspecies of the lesser rhea, has a total population in the wild of only several hundred.

SPECIES ACCOUNT



LESSER RHEA *Pterocnemia pennata*

Physical characteristics: The lesser rhea is 36 to 39 inches (92 to 100 centimeters) in height and weighs 33 to 55 pounds (15 to 25 kilograms).

Geographic range: Lesser rheas are found in Argentina, Bolivia, Chile, and Peru.

Habitat: Lesser rheas live in the grassy, open high plains of South America.



Diet: Lesser rheas are omnivores, meaning they eat both plants and flesh. They primarily eat grasses, plants, leaves, roots, fruit, and seeds along with insects, lizards and small mammals. They drink little water and get most of the liquid they need from plants. They also swallow pebbles to aid with digestion.

Behavior and reproduction: Lesser rheas are social creatures that usually live in herds of five to thirty individuals. In the spring and summer breeding season, males become territorial by selecting an area of land as their territory and defending it against other males. Females also leave the larger group to congregate in smaller flocks.

The flightless birds are fast runners, capable of reaching speeds of up to 37 miles (60 kilometers) per hour. They are also strong swimmers, capable of crossing rivers. They have excellent eyesight and hearing. They often graze with smaller herbivores and are able to detect predators, animals that hunt them for food, from a long distance, thus alerting the other grazing animals to the danger.

Lesser rheas are polygamous, meaning they have more than one mate during the breeding season. During the spring and summer, the male lesser rhea builds a nest in which between two and fifteen females lay their eggs. Nests contain ten to sixty eggs. The male incubates the eggs

The male lesser rhea sits on the eggs until they hatch, and then cares for the chicks for a few days. (© N.H. [Dan] Cheatham/Photo Researchers, Inc. Reproduced by permission.)

by sitting on them for thirty-five to forty days in order to keep them warm, so that they may later hatch. After the eggs hatch, the male cares for the chicks for a few days. He then leads the chicks away from the nest but they stay in contact through a series of whistles.

Lesser rheas and people: Lesser rheas are hunted in the wild by humans for their meat, skin, and feathers. They are raised commercially on farms in the United States and Canada for their meat. They are viewed with mixed feelings by farmers and ranchers. Farmers consider them agricultural pests because they will eat almost any crop. Cattle ranchers consider them beneficial because they often graze with sheep and eat grasses that have sharp burrs that become entangled in sheep's wool.

Conservation status: The lesser rhea is listed by the World Conservation Union (IUCN) as Near Threatened, because their populations are declining throughout their range. Much of their habitat is shrinking due to conversion to farmland. The Puna rhea, a subspecies of the lesser rhea, has a total population in the wild of only several hundred. ■

FOR MORE INFORMATION

Books:

Davies, S. J. J. F., et al. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann, and John B. Wexo. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries (Zoo Books)*. Mankato, MN: Creative Education, 2000.

Periodicals:

Bouzat, Juan L. "The Population Genetic Structure of the Greater Rhea (*Rhea americana*) in an Agricultural Landscape." *Biological Conservation*. (June 2001): 277–284.

Codenotti, Thais L., and Fernando Alvarez. "Mating Behavior of the Male Greater Rhea." *Wilson Bulletin* (March 2001): 85.

Fernández, Gustavo J., and Myriam E. Mermoz. "Group Copulation Solicitation Display Among Female Greater Rheas." *Wilson Bulletin* (December 2003): 467–470.

Fernández, Gustavo J., et al. "Effect of Group Size on Individual and Collective Vigilance in Greater Rheas." *Ethology* (May 2003): 413–425.

Navarro, Joaquín L., et al. "Fertility of Greater Rhea Orphan Eggs: Conservation and Management Implications." *Journal of Field Ornithology*. (January 1998): 117–120.

Zannini, Marie, and Greg Zannini. "Another Look at Rheas." *Countryside & Small Stock Journal* (January–February 1995): 28–30.

Web sites:

Cholewiak, Danielle. "Family Rheidae." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Rheidae.html> (accessed on July 13, 2004).

Ivory, Alicia. "*Rhea pennata*." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Rhea_pennata.html (accessed on July 13, 2004).

CASSOWARIES

Casuaridae

Class: Aves

Order: Struthioniformes

Family: Casuariidae

Number of species: 3 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Cassowaries are large, long-legged birds. They range in height from 40 to 67 inches (102 to 170 centimeters) and weigh 30 to 130 pounds (14 to 59 kilograms). They have tiny wings with coarse, black feathers.

They belong to a group of birds called ratites, which are flightless birds that have a flat breastbone rather than a keeled breastbone like birds of flight. They have a simplified wing bone structure, strong legs, and no feather vanes, making it unnecessary to oil the feathers. Consequently, unlike most birds they have no preen gland, a gland on the rear of most birds which secretes an oil the birds use in grooming.

Their heads are a brilliant blue and purple color, topped with a casque, or helmet, on the top. They have long, red wattles, folds of unfeathered skin, that hang from the neck, much like those of a turkey.

GEOGRAPHIC RANGE

Cassowaries are found in northern Australia, Papua New Guinea, and surrounding islands.

HABITAT

Cassowaries live in rainforest, ranging from lowland swamp forests to mountainous forests.

DIET

Cassowaries are omnivores, meaning they eat both plants and flesh. Their diet consists mainly of fruit, but they will also

eat lizards, snakes, small marsupials (animals that have a pouch), and other birds.

BEHAVIOR AND REPRODUCTION

Cassowaries are solitary birds except during mating and the egg-laying period. They are normally shy but when threatened, can attack, kicking and slashing victims with their sharp claws. Although they do not fly, they are good swimmers and fast runners.

A male cassowary is territorial, meaning it is protective of an area it considers home and claims exclusively for itself and its mate. A male's territory is approximately 2.8 square miles (7 square kilometers) in size. Females have overlapping ranges belonging to several males.

During the breeding season that starts in May or June, the female lays three to eight large, dark, bright green or greenish blue eggs in a nest that is incubated by the male. The female then moves on to lay eggs in several other males' nests. Incubation lasts from forty seven to sixty one days. The male cares for the chicks for nine months after they hatch.

After about nine months, the young cassowaries leave the nest and the males go off in search of an area they can claim as their own territory. The average lifespan of cassowaries in the wild is believed to be forty to fifty years.

The big birds play a critical role in the health of the rainforest of northern Australia and New Guinea by dispersing the seeds of more than 150 types of trees through their excretions. It is the only way seeds of at least eighty trees get dispersed.

Two species of cassowaries, the dwarf cassowary and the southern cassowary, found in the rainforests of Papua New Guinea, make a very low booming sound, deeper than that of most birds, that can barely be heard by humans.

Scientists believe the sounds are meant to call for a mate or to claim a territory. "Such low frequencies are probably ideal for communication among widely dispersed, solitary cassowaries in dense rainforest," wrote Andrew L. Mack, a scientist with the Wildlife Conservation Society, in the October 2003 issue of the



ATTACK OF THE BIG BIRDS

Cassowaries are considered the most dangerous bird in the world. Though normally shy, when cornered or threatened, the cassowary will lash out, charging their victim, kicking and slashing with their razor-sharp claws. In 1999 there were 144 documented cassowary attacks on humans in Australia, six causing serious injury. There were also cassowary attacks on dogs, horses, and one cow. The last reported death from a cassowary attack occurred in 1926 when a sixteen-year-old boy was killed by a single kick to the neck after hitting the bird with a stick.

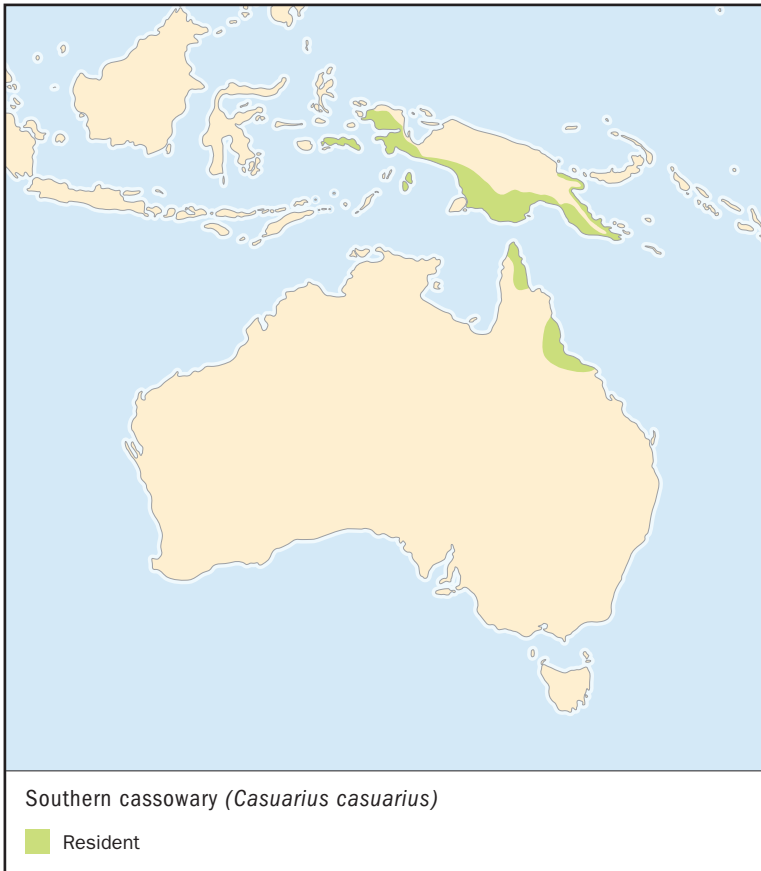
scientific journal *The Auk*. “The discovery of very low-frequency communication by cassowaries creates new possibilities for studying those extremely secretive birds and for learning more about the evolution of avian vocalizations.”

CASSOWARIES AND PEOPLE

Humans have hunted Cassowaries for hundreds of years for their meat and feathers. Hunting cassowaries is now illegal in Australia. They do not breed well in captivity and there are only about forty cassowaries in Australian zoos and wildlife parks.

CONSERVATION STATUS

The dwarf cassowary is listed by IUCN as Near Threatened, not currently threatened, but could become so. The southern cassowary and northern cassowary are listed by IUCN as Vulnerable, facing a high risk of extinction in the wild, due to rapidly declining populations. The total number of the three species of cassowary is estimated at 1,500 to 3,000, although several estimates range up to 10,000.



SOUTHERN CASSOWARY

Casuarius casuarius

SPECIES ACCOUNT

Physical characteristics: Southern cassowaries are 50 to 67 inches (127 to 170 centimeters) in length. Females weigh about 128 pounds (58 kilograms) and males weigh 64 to 75 pounds (29 to 34 kilograms). The neck skin is red and blue and the feathers of adults are glossy black. They have two long, red wattles, which are folds of unfeathered skin that hang from the neck.

Geographic range: Southern cassowaries are found in Queensland in two areas of northern Australia: the wet tropics from Mt. Halifax to Cooktown, and on Cape York Peninsula. They also live in Papua New Guinea.



The male southern cassowary cares for his chicks for nine months after they hatch. (Cliff Frith/Bruce Coleman Inc. Reproduced by permission.)

Habitat: They live primarily in lowland rainforests below 3,600 feet (1,100 meters).

Diet: Southern cassowaries are omnivores, meaning they eat both plants and flesh. Their diet consists mainly of fruit but they will also eat flowers, lizards, snakes, snails, small marsupials, and birds.

Behavior and reproduction: During the breeding season in June and July, the female lays one to four lime green eggs in a nest that is incubated by the male. The female then moves on to lay eggs in several other males' nests. Incubation lasts from forty-seven to sixty-one days. The male cares for the chicks for nine months after they hatch.

Southern cassowary and people: Once common throughout its natural range, the southern cassowary is now rarely seen in the wild. In Australia and Papua New Guinea, the southern cassowary is part of the mythology and culture of the indigenous peoples. The birds are still hunted and chicks are captured and raised in pens until they become adults, then slaughtered for meat.

The southern cassowary needs large areas of rainforest to survive and protected areas, such as national parks, are not enough. Conservationists in the two southern cassowary population areas have been using different methods to combat this problem. They have established nurseries to grow rainforest fruit trees that can be replanted in cleared land, as well as forming corridors between two separated habitats.

Conservation status: The southern cassowary is listed by IUCN as Vulnerable due to rapidly declining populations. The Australian government has listed the southern cassowary as an Endangered species. Estimates in Australia place the total population at 1,200 to 1,500 individuals. The populations are declining due to loss of habitat, deaths by vehicles, dogs, wild pigs, and illegal hunting. ■

FOR MORE INFORMATION

Books:

Clements, James F. *Birds of the World: A Checklist*. Vista, CA: Ibis Publishing Co., 2000.

Davies, S. J. J. F., et al. *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae (Bird Families of the World, Volume 8)*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann, and John B. Wexo. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries (Zoo Books)*. Mankato, MN: Creative Education, 2000.

Periodicals:

Baker, Jordan. "Qld: Cassowary Numbers Falling." *Asia Africa Intelligence Wire* (September 13, 2002).

"Be Wary, Cassowary." *U.S. Kids* (March 1998): 19–22.

Bond, Ruskin. "The Elephant and the Cassowary." *Highlights for Children* (February 1997): 25.

"Cassowary Talks to Mates in a Low Tone." *Asia Africa Intelligence Wire* (November 6, 2003).

Mack, Andrew L., and Gretchen Druliner. "A Non-Intrusive Method for Measuring Movement and Seed Dispersal in Cassowaries." *Journal of Field Ornithology* (April 2003): 193–196.

Mack, Andrew L., and Josh Jones. "Low-Frequency Vocalizations by Cassowaries." *The Auk* (October 2003): 1062–1068.

Nihill, Michael. "Dangerous Visions: The Cassowary as Good to Think and Good to Remember Among the Anganen." *Ocean* (June 2002): 258–275.

Web sites:

Cholewiak, Danielle. "Family Casuariidae." Animal Diversity Web. <http://www.animaldiversity.ummz.umich.edu/site/accounts/information/Casuariidae.html>

EMU

Dromaiidae

Class: Aves

Order: Struthioniformes

Family: Dromaiidae

One species: Emu (*Dromaius novaehollandiae*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The emu is the largest bird native to Australia and the second largest bird in the world. Emus are 60 to 75 inches (150 to 190 centimeters) in height and weigh 51 to 120 pounds (23 to 55 kilograms). They have long, strong legs and can run up to 30 miles per hour (48 kilometers per hour). They have long necks and short wings. The adults have brown feathers while the chicks are striped with black, brown, and cream-colored feathers. They have heads with blue skin and stiff black hair. Females are slightly larger than males.

Emus belong to a group of birds called ratites (RAT-ites), which are flightless birds that have a flat breastbone rather than a keeled or curved breastbone like birds of flight. They have a simplified wing bone structure, strong legs, and no feather vanes, making it unnecessary for them to oil their feathers. Consequently, they have no preen gland that contains preening oil, unlike most birds.

Emus have long, loose double feathers in which the after-shaft, or the secondary feather that branches from the base of the main feather, is as long as the main feathers.

GEOGRAPHIC RANGE

Emus are found throughout Australia. They are most common in southern Australia although they can be found as far north as the city of Darwin.

HABITAT

Emus live in eucalyptus forests, woodlands, shrublands, desert, sandy plains, grasslands, and high alpine plains.

DIET

Emus are omnivores, meaning they eat both plants and flesh. They prefer plant parts that are rich in nutrients they need, such as seeds, fruits, flowers, and young shoots. They also eat insects, such as grasshoppers, beetles, and caterpillars. More rarely, they will eat lizards, snakes, small rodents, and small marsupials (animals that have a pouch). They usually drink water every day and get some of the liquid they need from plants. They also swallow pebbles to aid with digestion.

BEHAVIOR AND REPRODUCTION

Emus are diurnal, meaning they are most active during the day. They live in pairs and are nomadic, following the rain to feed. They can walk considerable distances at a steady pace of 4.3 miles (7 kilometers) per hour covering 9 feet (270 centimeters) in a single stride. Emus are also strong swimmers.

Emus have adapted well to their Australian environment, where it is often arid and food is not always available in the same place throughout the year. To find food once an existing supply is exhausted, emus sometimes travel hundreds of miles (kilometers) to find a new food source. They have also adapted to the often-harsh Australian environment with their food storage ability. When food is plentiful, emus store large amounts of fat that they live off of while searching for new food supplies. Sometimes, adult emus will lose more than 50% of their weight while in between food supplies, dropping from 100 pounds (45 kilograms) to 44 pounds (20 kilograms.)

Emus are solitary creatures and although they often travel in large flocks, this is not social behavior, rather simply going where there is food. In Western Australia, emu migration runs north in summer and south in winter. In eastern and southern Australia, their wanderings are random. On extremely hot days, emus pant, meaning they open their mouths and breathe very rapidly, much like dogs, using their lungs as evaporative coolers.

Emus have an uncanny and ill-understood way of detecting rain from several hundred miles (kilometers) away. Researchers believe this is a combination of sighting distant rain cloud formations, smelling rain, and hearing the far-off sound of thunder from distances the human ear cannot.

Male and female emus pair up in December and January, establishing a territory of about 12 square miles (30 square kilometers) where they mate. The male builds a nest by placing



bark, grass, twigs, and leaves in a shallow depression in the ground. In April, May, and June, the female lays large, thick-shelled dark green eggs, with one nest containing the eggs of several females. When a nest has about eight to ten eggs, the male incubates them, meaning he sits on the eggs to keep them warm until they hatch. Nests can contain fifteen to twenty eggs on occasion.

From the time the male starts incubating the eggs, he does not eat, drink, or pass bodily wastes. The male survives only on accumulated body fat. He sits on the nest twenty-four hours a day, standing about ten times a day to turn the eggs. The eggs hatch in about fifty-six to sixty days. The chicks remain with the male for five to seven months. The young reach sexual maturity at two to three years of age. The average lifespan of emus in the wild is five to ten years.

EMUS AND PEOPLE

Emus have been roaming Australia for eighty million years, when dinosaurs still walked the Earth. But even though they survived the extinction event that killed the dinosaurs, they came close to being wiped out by humans. In 1901, farmers in Western Australia built a 682-mile (1,100-kilometer) fence to keep emus away from grain crops. But the fence disrupted emu migration and as many as 50,000 birds died each year from starvation.

In 1932, the Australian government literally declared war on the big bird. Army troops with truck-mounted machine guns and hand grenades were used to hunt down and kill emus. The war was short-lived after the army learned the fast-running birds could easily outmaneuver them. Still, it is estimated that hundreds were killed. Emus are now protected by law and the total population in the wild is estimated at 500,000 to one million.

Emus are raised commercially in the United States, Australia, Europe, and South Africa for their meat, skin, eggs, and feathers. Farmers in Australia often consider them agricultural pests. Emu oil is also being studied in the United States for its possible medical applications. It is used as an antiseptic, moisturizer, and anti-inflammatory agent. It is also found in eye creams, hair care products, and other cosmetics. Research indicates that emu oil promotes wound healing and may be effective in treating arthritis. The U.S. Food and Drug Administration has not approved its use for medical conditions.

CONSERVATION STATUS

The emu is not listed as threatened by the IUCN. Two species, the Kangaroo Island emu and the King Island emu, as well as one subspecies, the Tasmanian emu, became extinct in the 1800s due to hunting by humans.



The emu is the largest Australian bird, and is found throughout the continent. (Janis Burger/Bruce Coleman Inc. Reproduced by permission.)

FOR MORE INFORMATION

Books:

Davies, S. J. J. F., et al. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann, and John B. Wexo. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries (Zoo Books)*. Mankato, MN: Creative Education, 2000.

Fowler, Allan. *These Birds Can't Fly*. New York: Bt Bound, 2001.

Harris, Timothy. *Ostriches, Rheas, Cassowaries, Emus, and Kiwis*. New York: Beech Publishing House, 1997.

Simpson, Ken, and Nicolas Day. *Birds of Australia*. Princeton, NJ: Princeton University Press, 2000.

Periodicals:

Adil, Janeen R. "It's an Emu (That's Who)." *Ranger Rick* (April 2002): 21.

Davis, Karen. "Nowhere to Hide." *Poultry Press* (Fall-Winter 1993): 1-5.

Grice, D., et al. "Density and Distribution of Emus." *Australian Wildlife Research* 12 (1985): 69-73.

Rokicki, Rachel. "The Great Emu Comeback." *Mother Earth News* (October 2000): 16.

Web sites:

American Emu Association. <http://www.aea-emu.org> (accessed on July 12, 2004).

"Emus & Ostriches." Animals Australia. <http://www.animalsaustralia.org/default2.asp?idL1=1273&idL2=1304> (accessed June 6, 2004).

Ivory, Alicia. "Dromaius novaehollandiae." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Dromaius_novaehollandiae.html (accessed June 6, 2004).

family CHAPTER

KIWIS Apterygidae

Class: Aves

Order: Struthioniformes

Family: Apterygidae

Number of species: 4 species

PHYSICAL CHARACTERISTICS

Kiwis (KEE-weez) are about the size of a chicken. They range in height from 14 to 22 inches (35 to 55 centimeters) and weigh 2.6 to 8.6 pounds (1.2 to 3.9 kilograms). They have brown and black hair-like feathers, no tail, and four toes.

Kiwis are the smallest of a group of birds called ratites, flightless birds that have a flat breastbone rather than a keeled (curved) breastbone like birds of flight. They have a simplified wing bone structure, strong legs, and no feather vanes, the barbs that make up each feather, making it unnecessary to oil the feathers. Consequently, they have no preen gland, which normally contains preening oil.

GEOGRAPHIC RANGE

Kiwis are found in various locations in New Zealand and on nearby islands, including Stewart Island. The North Island brown kiwi is the most widespread, with an estimated 30,000 in the wild.

HABITAT

Most kiwis prefer subtropical and temperate forests, including coniferous and deciduous forests, grassland, scrubland, and farmland. Two varieties live in the higher elevations, the Stewart Island brown kiwi and great spotted kiwi.

DIET

Kiwis are primarily insectivores, meaning they eat mainly insects. Their diet includes earthworms, beetles, snails, caterpillars,

phylum

class

subclass

order

monotypic order

suborder

▲ family



UNIQUE KIWI PARENTING

Little spotted kiwis have a way of raising their young that is unique among kiwis. The male incubates the eggs for seventy days. Once the chicks hatch, the female helps in the rearing. Adult little spotted kiwis do not feed their young but the males and females escort their chicks into the forest to search for food, mainly berries and worms. With other species, the chicks are left on their own to find food after hatching. The little spotted kiwi is one of the most endangered of all kiwis. Human destruction of their habitat is the primary reason for their decline. Once common on the mainland of New Zealand, only about 1,000 remain off the mainland on Tiritiri Matangi Island, Red Mercury Island, Mana Island, Long Island, Hen Island, and Kapiti Island. They also survive on the Kaori Kiwi Reserve in Wellington as part of the government's captive breeding program.

centipedes, spiders, cockroaches, praying mantises, snails, locusts, crickets, grasshoppers, and insect larvae. They will eat some plant material, such as fallen fruit and berries, but only rarely. Kiwis find most of their food by scent, using the highly sensitive nostrils located at the end of their beak.

BEHAVIOR AND REPRODUCTION

Kiwis are nocturnal, meaning they are most active at night. They live in burrows they dig several weeks before they are used. This allows the regrowth of moss and other vegetation that camouflages (KAM-uh-flaj-uhs) the burrow. A pair of kiwis can have up to one hundred burrows within their established territory, which is generally 61.75 acres (25 hectares) but can be as much as 120 acres (48 hectares).

Kiwis are shy, night birds with a keen sense of smell. They are monogamous, meaning they mate with only one partner. They pair up for at least two or three breeding seasons and sometimes for life. The female usually digs a nest in the ground where she lays one or two large eggs, weighing about 1 pound (0.45 kilograms) each.

KIWIS AND PEOPLE

The kiwi is the national symbol of New Zealand and an important draw for tourists. Its image is found on New Zealand stamps, coins, and corporate logos, including the now-defunct Kiwi Air. It is used to promote a variety of commercial products.

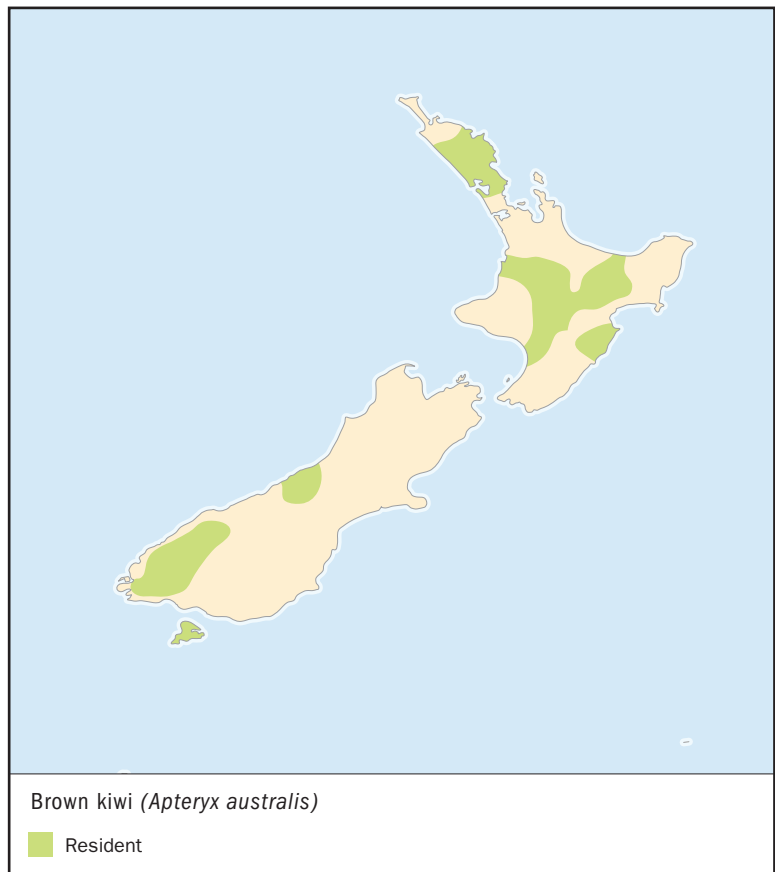
CONSERVATION STATUS

The IUCN lists the brown kiwi as Endangered, facing a very high risk of extinction, and three kiwi species as Vulnerable, facing a high risk of extinction: the little spotted kiwi, great spotted kiwi, and brown kiwi.

About 1,000 years ago, there were an estimated twelve million kiwis in New Zealand. That number dropped to five million by

1930 due to hunting by humans and animals, such as dogs, cats, and stoats, which are small weasels. As of 2004, there are only about 50,000 to 60,000 kiwis left in the wild and that number is dwindling each year. In 1991, the New Zealand government began a kiwi recovery program that includes establishing kiwi sanctuaries.

SPECIES ACCOUNT



BROWN KIWI *Apteryx australis*

Physical characteristics: There are two subspecies (or types) of brown kiwi, the southern tokoeka kiwi, also called the Stewart Island brown kiwi, and Haast tokoeka kiwi, also known as the Haast brown kiwi. The southern variety is larger, with a stout body, powerful claws for digging, and loose brown and black feathers. It has a long beak with nostrils at the end for smelling. The Haast tokoeka kiwi is smaller with a plump, round body and small head with little eyes. It has a long beak that curves slightly downward with nostrils at the end.

Brown kiwis range in size from 18 to 22 inches (45 to 55 centimeters) with females weighing 4.6 to 8.5 pounds (2.1 to

3.9 kilograms) and males weighing 3.6 to 6.1 pounds (1.6 to 2.8 kilograms). They have short wings that end with a claw.

Geographic range: The Haast tokoeka kiwi is found in only a few mountainous areas of North Island New Zealand where the winters are harsh. The southern tokoeka kiwi is found on preserves in Fiordland and Westland on South Island and on Stewart Island.

Habitat: The Haast tokoeka kiwi lives in the coniferous pine forests of North Island while the southern tokoeka kiwi lives in subtropical, temperate, deciduous, and coniferous forests and shrublands.

Diet: Brown kiwis are mainly insectivores, meaning they eat mostly insects. Their diet includes earthworms, beetles, snails, caterpillars, centipedes, spiders, cockroaches, praying mantises, locusts, crickets, grasshoppers, and insect larvae.

Behavior and reproduction: Brown kiwis are nocturnal, meaning they are most active at night. During the day, they sleep in dens or burrows. They are monogamous, meaning they mate with only one partner during one or more breeding seasons. They live in pairs and are territorial, meaning they are protective of an area they consider home and claim exclusively for themselves. A brown kiwi pair's territory ranges from 12 to 106 acres (5 to 43 hectares).

During the breeding season, the female lays one or two eggs in a nest made in thick vegetation. The male incubates the eggs, meaning he sits on them to keep them warm so the embryos inside can develop and hatch. The incubation period is about ninety days.

Brown kiwis and people: The brown kiwi has no economic significance for humans. It is a protected species in New Zealand and the government has established a recovery program for them, including captive breeding and establishing sanctuaries.

Conservation status: The brown kiwi is listed by the IUCN as Vulnerable. There are an estimated 30,000 southern tokoeka kiwis in the wild and only 200 to 300 Haast tokoeka kiwis in a few select areas of New Zealand. ■

FOR MORE INFORMATION

Books:

Davies, S. J. J. F., et al. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann, and John B. Wexo. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries (Zoo Books)*. Mankato, MN: Creative Education, 2000.

Harris, Timothy. *Ostriches, Rheas, Cassowaries, Emus, and Kiwis*. New York: Beech Publishing House, 1997.

Lockyer, John, et al. *The Kiwi*. Auckland, New Zealand: Reed Publishing (NZ) Ltd., 2002.

Talbot-Kelly, Chloe. *Collins Birds of New Zealand*. Auckland, New Zealand: HarperCollins New Zealand, 1997.

Periodicals:

De Roy, Tui. "New Zealand's Bizarre Un-Bird." *International Wildlife* (May-June 1997): 38-43.

Grzelewski, Derek. "Night Belongs to the Kiwi—It May Look Fuzzy and Adorable but This New Zealand Bird is One Tough Customer." *Smithsonian* (March 2000): 76.

Web sites:

Matherly, Carrie. "Apteryx haastii." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Apteryx_haastii.html (accessed on June 6, 2004).

Naumann, Robert. "Apteryx owenii." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Apteryx_owenii.html (accessed on June 6, 2004).

Tervo, Kari. "Apteryx australis." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Apteryx_australis.html (accessed on June 6, 2004).

family CHAPTER

OSTRICH Struthionidae

Class: Aves

Order: Struthioniformes

Family: Struthionidae

One species: Ostrich
(*Struthio camelus*)

PHYSICAL CHARACTERISTICS

Ostriches are ratites, flightless birds that have a flat breastbone rather than a keeled or curved breastbone like birds of flight. They have a simple wing bone structure, strong legs, and no feather vanes, making it unnecessary to oil the feathers. Therefore, ostriches have no preen gland that contains preening oil.

Ostriches are the largest birds in the world, with long legs and necks. They range in height from 5.7 to 9 feet (1.8 to 2.8 meters) and weigh from 139 to 345 pounds (63 to 157 kilograms). They have loose-feathered wings. Males have black and white feathers while females have grayish brown feathers. They have powerful legs, each with two toes. One of their two toes has a strong 4-inch (10-centimeter) claw while the other toe is usually clawless.

There are four living subspecies of ostrich: North African, Somali, Masai, and South African. Skin color is usually light but varies among subspecies, including pink in the North African ostrich and blue in the Somali ostrich.

GEOGRAPHIC RANGE

Ostriches are found in parts of central and southern Africa.

HABITAT

Ostriches live in dry, sandy regions of Africa, including grassland, desert, woodlands, shrubland, and savannas, flat grasslands with scattered trees and shrubs.

phylum

class

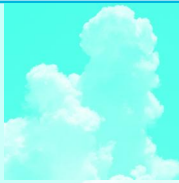
subclass

order

monotypic order

suborder

▲ **family**



HEADS UP

It is a myth that ostriches, when frightened, will hide their heads in a hole or bury them in the sand. Often, when they feel they are in danger, ostriches will try to escape detection by laying flat on the ground with their necks and heads outstretched. Since the head and neck are usually a light color, they blend in well with the dirt and sand. From a distance, only the body is readily visible and it is believed this behavior gave rise to the myth.

DIET

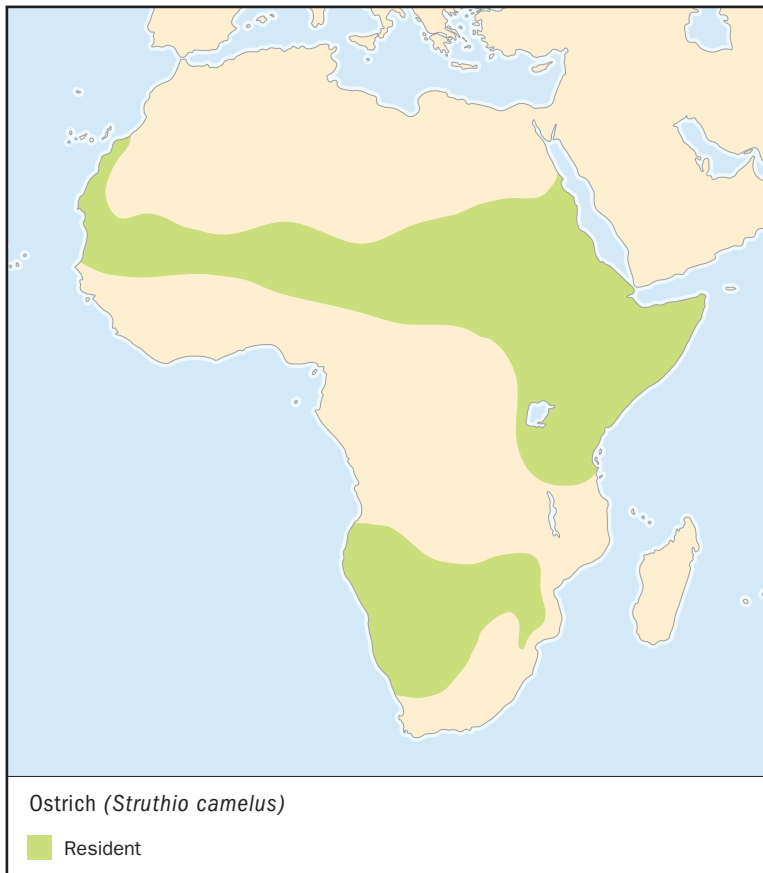
Ostriches are omnivores, meaning they eat both plants and animals. Their primary diet includes grasses, shrubs, seeds, roots, leaves, flowers and sometimes locusts and grasshoppers. However, they will on occasion eat small animals, such as lizards and mice, and animal remains. Ostriches also eat sand and small stones that help grind up food in their digestive systems. Their intestines are 46 feet (14 meters) long, allowing food to remain in their systems a long time in order to absorb a maximum amount of nutrients from their food.

BEHAVIOR AND REPRODUCTION

Ostriches are diurnal, meaning they are most active during the day. They are sometimes active on moonlit nights. They live in flocks, families and alone. The flocks can range in size from five to fifty birds and are usually found grazing with other herbivores, including antelope and zebras. During the breeding season, flocks occupy territories of 0.8 to 6 square miles (2 to 15 square kilometers). Flocks often gather together, forming large groups of hundreds of birds. Outside the breeding season, flocks are usually much smaller, generally two to five birds but sometimes up to ten birds. Male ostriches are called cocks and females are hens.

Ostriches take frequent sand baths, especially during dry periods, laying together in large sandy depressions where they stir up the sand with powerful wing beats. They also like to take water baths, and do so frequently during the wet season when pools of water are more plentiful.

The normal walking pace of ostriches is 2.5 miles per hour (4 kilometers per hour). When ostriches sense danger or are threatened, they can run at speeds of up to 45 miles per hour (70 kilometers per hour) for a few minutes and can maintain a steady speed of about 31 miles per hour (50 kilometers per hour) for thirty minutes. Ostrich strides can be 10 to 16 feet (3 to 5 meters). When running, ostriches hold their wings out for balance, especially when making sudden turns. Ostriches



prefer to outrun their predators but when cornered, they will use their long and thick legs as weapons. An ostrich's kick is so powerful, it has been known to kill lions.

Ostriches have a wide variety of vocal sounds, including whistles, snorts, and grunts. They have a loud booming call used to announce their territory.

Ostriches are territorial, meaning they are protective of an area they consider home and claim exclusively for themselves. Each family has its own territory, which is established by the dominant male. The family also has a dominant female and several other females, called minor hens. During the mating season, a male will show its dominance by stretching its head high and lifting its wing and tail feathers. Ostriches of both sexes show submission by holding their heads, wings, and tails towards the ground.

When ostriches are not breeding, they usually form flocks of two to ten birds. (© Nigel Dennis/Photo Researchers, Inc. Reproduced by permission.)



Males and females are polygamous (puh-LIH-guh-mus), meaning they have more than one mate at the same time. Following mating, the dominant male will build a nest by scraping the ground or sand with his feet several times, making a shallow depression. A number of females will lay their eggs in a single nest. The dominant hen is the first to lay eggs. She will lay up to twelve eggs in the center of the nest over a three-week period. The minor hens will then lay their eggs around the dominant hen's eggs. Ostrich nests usually contain thirteen to twenty eggs but can contain up to sixty eggs. On average, one egg is 6 inches (15 centimeters) long and 5 inches (13 centimeters) wide and weighs 3 pounds (1.4 kilograms). Often, after all the eggs are deposited, the dominant female will discard some of the eggs laid by the minor hens. The dominant male sits on the eggs at night and the dominant female during the day. The eggs take about forty-two days to hatch. About 10 percent of the eggs will hatch and on average only one chick per nest will survive to adulthood. The average lifespan of an ostrich is thirty to forty years but can be up to fifty years, both in the wild and in captivity.

OSTRICHES AND PEOPLE

The documented relationship between ostriches and humans dates back 5,000 years to Mesopotamia and Egypt, where ostriches were raised for their feathers, eggs, skin, and meat. Ostriches are still used for these purposes but are raised on commercial farms in Africa, Europe, and North America. Their eggs are used both as food and for decoration.

CONSERVATION STATUS

Ostriches are not listed as a threatened species by the World Conservation Union (IUCN). The subspecies known as the Arabian ostrich is believed to have become extinct, no longer existing, in the 1940s. Ostriches were common in most of Africa and southwest Asia until about 100 years ago. Ostrich populations began declining about 300 years ago when their feathers became fashionable and hunting was widespread. By the early 1800s, ostriches were nearly extinct and farms were established in Africa to raise them. Although they survived extinction, their numbers are limited. They are found mostly in national parks, game preserves, and commercial farms.

FOR MORE INFORMATION

Books:

Davies, S. J. J. F., et al. *Bird Families of the World*. Vol. 8, *Ratites and Tinamous: Tinamidae, Rheidae, Dromaiidae, Casuariidae, Apterygidae, Struthionidae*. Oxford, U.K.: Oxford University Press, 2002.

Elwood, Ann. *Ostriches, Emus, Rheas, Kiwis, and Cassowaries*. Mankato, MN: Creative Education, 1991.

Harris, Timothy. *Ostriches, Rheas, Cassowaries, Emus, and Kiwis*. New York: Beech Publishing House, 1997.

Sinclair, Ian, et al. *Birds of Southern Africa*. Princeton, NJ: Princeton University Press, 2002.

Zim, H. S. *Ostriches*. New York: William Morrow, 2000.

Periodicals:

Manilus, N. "The Ostrich in Egypt: Past and Present." *Journal of Biogeography* (August 2001): 945–953.

Ostrowski, S., et al. "Evidence of a Dramatic Decline of the Red-Necked Ostrich *Struthio camelus camelus* in the Air and Tenere National Nature Preserve, Niger." *Oryx* (October 1, 2001): 349–352.

Potts, D. T. "Ostrich Distribution and Exploitation in the Arabian Peninsula." *Antiquity* (March 2001): 182.

Thompson, Rebecca S. "Raising Emus and Ostriches." *United States Department of Agriculture Special Reference Brief*, No. SRB 97-06. (November 2000).

Web sites:

American Ostrich Association. <http://www.ostriches.org> (accessed on June 25, 2004).

Donegan, Keenan. "Struthio camelus." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Struthio_camelus.html (accessed on June 25, 2004).

order

CHAPTER

TUBENOSED SEABIRDS

Procellariiformes

Class: Aves

Order: Procellariiformes

Number of families: 4 families

PHYSICAL CHARACTERISTICS

Tubular nostrils are common to every procellariiform (member of the order Procellariiformes). In the albatross, the nostrils stick out from both sides of the bill. In the other three families, the nostrils sit at the base of the upper bill. Procellariiforms differ from other birds in that they have a highly developed sense of smell, which helps them locate food and breeding sites. Procellariiforms' bills are split into seven to nine horny plates, and the upper bill is hooked. This sharp hook, which is actually formed by a plate, allows the birds to hold onto slippery foods such as fish and squid.

No other bird order has as large a size range as these seabirds. The storm-petrel weighs less than 1 ounce (20 grams) and has a wingspan of 12.5 inches (32 centimeters). The largest species, the albatross, can weigh more than 24 pounds (11 kilograms) and has wingspan of up to 12 feet (3.6 meters).

Procellariiformes are covered in black, gray, brown, and white feathers. Most have black legs and feet, though the shearwaters' are blue. The bills are dark gray or black and often have a distinct yellow, orange, or pink coloration.

Procellariiformes have oil in their stomachs that acts as a food source during the long periods between meals. In addition, the oil is used as a defense mechanism. When threatened, chicks and ground-nesting adults regurgitate (re-GER-jih-tate), bring up from the stomach, the oil and spray it over their predators. The oil cools to a waxy substance that damages the feathers of the enemy birds.

phylum

class

subclass

● **order**

monotypic order

suborder

family

GEOGRAPHIC RANGE

No other birds have as wide a distribution as the Procellariiformes. They are found in Antarctica as well as Greenland and in every ocean across the globe.

HABITAT

Tubenosed seabirds are found mostly on islands with few land-based predators. Those that nest on the mainland do so primarily in deserts or mountainsides, where there are fewer predators. Because the larger birds need strong winds to help them get airborne, breeding sites must be windswept. This makes the sub-Antarctic islands perfect for breeding. Unless they are breeding, these birds spend their time on the ocean where food is abundant. Some species migrate, move from place to place, between the Northern and Southern Hemispheres, repeating the same migration pattern each year.

DIET

Larger seabirds such as the albatross eat mostly squid, though they snack on other seabirds and carrion, dead, rotting flesh, as well. They eat the carcasses of seals and whales while the smaller seabirds eat the leftover scraps. Only the larger seabirds look for food on land. All Procellariiformes take advantage of the behavior of whales, dolphins, sharks, and tuna. When these predators push schools of fish close to the surface in order to eat them, tubenosed seabirds dive down and snatch them from the water. These seabirds usually get their food from just below or on the surface of the water, though some of the species can dive more than 30 feet (10 meters) below the surface if necessary.

BEHAVIOR AND REPRODUCTION

Procellariiforms live in groups, even when breeding. Although their flocks often contain numerous species, fights occur frequently, with the larger species forcing out those smaller birds. Unless competing for food, most procellariiforms are silent on the water. However, when nesting on land, they communicate with shrieks and calls.

These seabirds breed slowly, laying just one egg each season. The mother sits on the egg anywhere from six to eleven weeks. Once born, chicks take two to nine months before they can fly independently. This waiting period is longer than that of most birds. Experts believe this is because there are very few

predators, animals that hunt them for food, on the islands where these birds build their nests, so there is no pressure for the chicks to learn to fly quickly. Procellariiforms do not breed during the first year of life, and larger species wait over ten years before they first breed.

During breeding season, tubenosed seabirds build their nests on the ground in large colonies. Both sexes help build the nest, and both help raise the chicks. Though procellariiforms do choose just one mate, evidence has shown that males are involved in pairings outside the primary relationship.

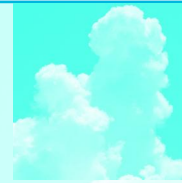
TUBENOSED SEABIRDS AND PEOPLE

Because of their ocean habitat, procellariiforms have a long history of interaction with fishermen and seafarers. These birds help fishermen locate fish and other marine life. In addition, their archaeological remains have been found around the world. Today, only the shearwater species is eaten, as are the eggs of the petrel. Humans also use the feathers of the albatross in the hat-making industry, and petrel is often used as bait by fishermen. Some communities use the stomach oil of procellariiforms as lamp oil and as an ingredient in medicine.

CONSERVATION STATUS

Twenty-three of the 108 species are threatened with extinction. One species, the Guadalupe storm-petrel, has become extinct since 1600. The primary threat is the introduction of predators to the breeding islands.

Prior to 1991, drift-net fishing was allowed. This is a type of fishing in which large nets were cast onto the waters and then hauled in. Although drift-nets efficiently caught large numbers of fish with little effort, they also caught other wildlife, including dolphins and seabirds. Drift-net fisheries were believed to be responsible for the deaths of 500,000 seabirds every year. Despite the ban on drift-net fishing, thousands of procellariiforms



DID YOU KNOW?

- Procellariiforms smell really bad. Experts attribute this smell to the oil in the birds' stomachs. Giant petrels are nicknamed "stinkers" because of the intensity of their odor.
- Some seafarers believed albatrosses were good omens and that killing one would bring bad luck.
- Other fishermen considered it bad luck to see an albatross.
- Folklore has it that procellariiforms are the embodiment of the souls of cruel sea captains or drowned sailors, destined to wander the seas for all eternity.
- Albatrosses are well known for being able to follow ships for thousands of miles (kilometers).
- Despite the superstition that to kill an albatross would bring bad luck, sailors used albatross feet for tobacco pouches even into the late 1800s.

are still killed by long-line fisheries, a method in which long, thick hooks are baited and cast out to sea; the hooks often get caught in the necks of albatrosses, and this method catches a lot of “trash” sea life, similar to drift-netting fisheries, and trawl, a bag-like net is carried along by a boat, catching everything in its wake. A 1991 study estimated that 44,000 albatrosses are killed in Japan each year by these methods.

FOR MORE INFORMATION

Books:

Bent, Arthur Cleveland. *Life Histories of North American Petrels and Pelicans and Their Allies*. New York: Dover Publications, 1987.

Robbins, Chandler S., et al. *Birds of North America: A Guide to Field Identification*. New York: St. Martin's Press, 2001.

Serventy, Vincent. *Flight of the Shearwater*. Kenthurst, Australia: Kangaroo Press, 1997.

Warham, John. *The Petrels: Their Ecology and Breeding System*. London and San Diego: Academic Press, 1990.

Periodicals:

Braasch, Gary. “Antarctic Mystery—Why Are Southern Giant Petrels Thriving on One Peninsula, But Declining Almost Everywhere Else?” *International Wildlife* (March–April 2001): 52–57.

Deneen, Sally. “Going, Going . . . Exotic Species are Decimating America’s Native Wildlife.” *E: The Environmental Magazine* (May–June 2002): 34–39.

Sessions, Laura. “Date With Extinction: For a Thousand Years Before People Settled in New Zealand, a Small Alien Predator May Have Been Undermining the Islands’ Seabird Population.” *Natural History* (April 2003): 52–57.

Web sites:

“Albatross and Petrels (Procellariiformes).” Earthlife. <http://www.earthlife.net/birds/procellariiformes.html> (accessed on May 13, 2004).

Organizations

NatureServe. <http://www.natureserve.org> (accessed on July 13, 2004).

family CHAPTER

ALBATROSSES

Diomedidae

Class: Aves

Order: Procellariiformes

Family: Diomedidae

Number of species: 14 species

PHYSICAL CHARACTERISTICS

The largest albatrosses have wingspans that can exceed 9.8 feet (3 meters). Adults have black backs and white underwings. Their hooked bills are 5.5 to 7.5 inches (14 to 19 centimeters) with a pinkish hue in adults that are raising chicks.

Northern Pacific albatrosses have wingspans of 6.2 to 7.9 feet (1.9 to 2.4 meters). Although all four species have short, black tails, their bodies vary in coloration. One of the smaller birds, the Laysan albatross, has white feathers on its body and dark upper wings while the black-footed albatross is mostly dark brown except for a white patch on its hind end. The eleven mollymawk species vary greatly in coloration.

The two sooty albatrosses have a wing span ranging from 6 to 7.15 feet (1.8 to 2.2 meters). They have the most pointed tails of the family and have mainly dark bills, feathers, and legs.

GEOGRAPHIC RANGE

Albatrosses are found in the northern Pacific Ocean, Galápagos Islands to the coasts of Ecuador and Peru. They are also found in the Southern Hemisphere on coastal waters.

HABITAT

An albatross spends more than 70 percent of its life on the ocean, where it searches for food, rests, and migrates, moves from one part of the world to another. Albatrosses require wind to help them get off the ground, so windswept islands are chosen for breeding sites. Here they build their nests and raise their

phylum

class

subclass

order

monotypic order

suborder

▲ family



THE RIME OF THE ANCIENT MARINER

In 1798, Samuel Taylor Coleridge wrote a poem titled, *The Rime of the Ancient Mariner*. The mariner and his crew were visited by an albatross, considered by many to be a sign of good luck. When the mariner shoots the bird, his ship and shipmates are lost, he is blamed for committing a sin by killing a good-luck omen. As punishment, his shipmates hang the dead albatross around the neck of the ancient mariner. This poem popularized the albatross, and led it to become part of slang expression. The word “albatross” is now a figurative expression used to mean “something that hinders or handicaps.”

young for the first months of life. Certain species prefer small, rocky islands on which to build their nests while others choose grassy slopes or plains so that there can be more distance between nesting sites.

DIET

Squid is the favorite food of the albatross. Because many squid glow in the dark, albatross often feed at night. They also eat the carcasses of seals, penguins, whales, and other marine life. In addition to fish, albatrosses consume crabs, krill, seaweed, and small seabirds. Most food is found at the water’s surface, though albatrosses have been known to dive and swim underwater for short distances (up to 16 feet [5 meters]) while foraging for food.

BEHAVIOR AND REPRODUCTION

Though quiet while at sea, albatrosses are quite noisy at breeding colonies, where they communicate by wailing, crying, and clattering their bills. There is a definite courtship, rituals associated with mating,

among the albatross, ranging from dances and wing displays to “calling” to one another.

Though fighting is not a regular occurrence, the albatross will defend its nest site. Usually a threat display or charging will be enough of a warning, but the hooked bill is useful in damaging eyes and bills if necessary. If approached, chicks and parents will regurgitate, bring up from the stomach, stomach oil and spew it at the intruder, covering him in a waxy substance that can harm feathers. The albatross grooms itself often, and parents are quite attentive to the cleaning of the chicks.

After finding suitable land, the albatross usually builds a bowl-shaped nest and deposits a single egg into it. Albatrosses are monogamous, having one mate, and lay one egg each year. Incubation, the time it takes to warm the egg sufficiently for hatching to begin, lasts anywhere from sixty-five to eighty-five days. Parents take turns sitting on the egg, and both will play a role in raising the chick. Each turn lasts from one to twenty-nine days.

Hatching occurs over a period of two to five days. Chicks remain with a parent at all times for the first three months and will fledge, take its first flight, between 120 and 180 days for smaller species to 220 and 303 days for the larger family members.

Albatrosses do not begin breeding until they are between the ages of five and fifteen years. Chicks have a high survival rate because the breeding site has very few land predators. Annual mortality, death, rates for adults range from 3 to 9 percent. The oldest known albatross was still breeding at more than sixty-two years old.

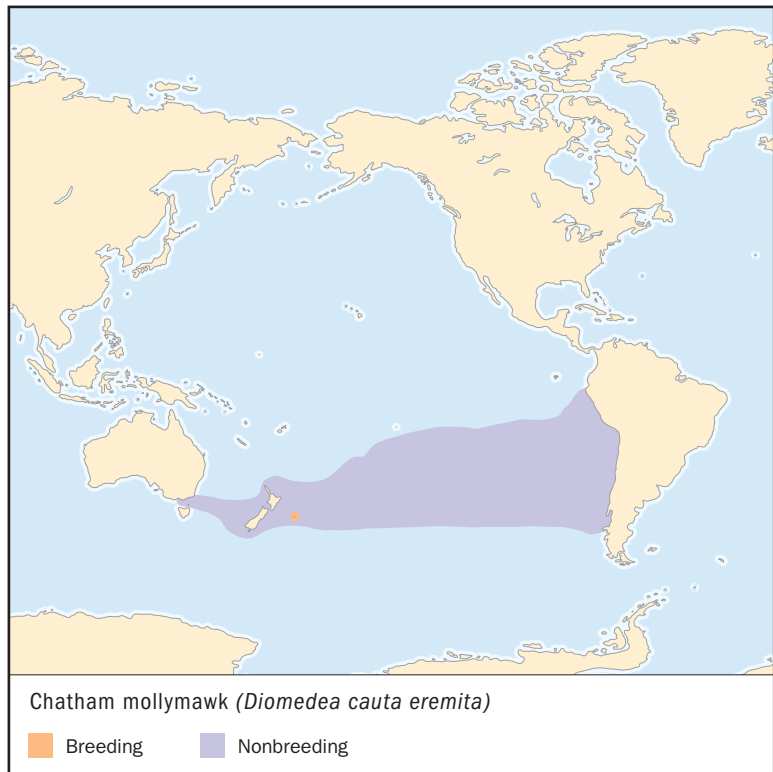
ALBATROSSES AND PEOPLE

Albatrosses were revered by some seafarers as a good luck sign. Others believed that to see an albatross at sea was warning of an oncoming storm. Fishermen depend on the albatross to show them where large populations of fish are located, and the harvesting of chicks (legally and illegally) goes on today. They are hunted for sport as well as food and scientific specimens.

CONSERVATION STATUS

There are not enough data to determine the rate of increase or decline for most species, but albatrosses are not in danger of extinction. Changes in global climate are responsible for the decrease in some species, such as the northern royal albatross. Changing sea temperatures also negatively affect food distribution and availability.

SPECIES ACCOUNTS



CHATHAM MOLLYMAWK *Diomedea cauta eremita*

Physical characteristics: Chatham mollymawks weigh in at 6.8 to 10.4 pounds (3.1 to 4.7 kilograms) and is the largest of the mollymawk family. They have a white body, dark gray head, and black upper wing and tail. The underwing is white except for wingtip and small dark patch at base of wing. Their bill is yellow with a dark tip and the cheek has an orange stripe across it.

Geographic range: Chatham mollymawks breed only at The Pyramid, a small rocky area of the Chatham Islands. They rarely stray far from this site, even during the nonbreeding season.

Habitat: Chatham mollymawks build small nests of soil and sparse vegetation on rocky slopes and ledges. These nests usually collapse and must be rebuilt every season.

Diet: They live off of krill, barnacles, and fish. They also scavenge behind fishing boats for bait and other discarded marine life.

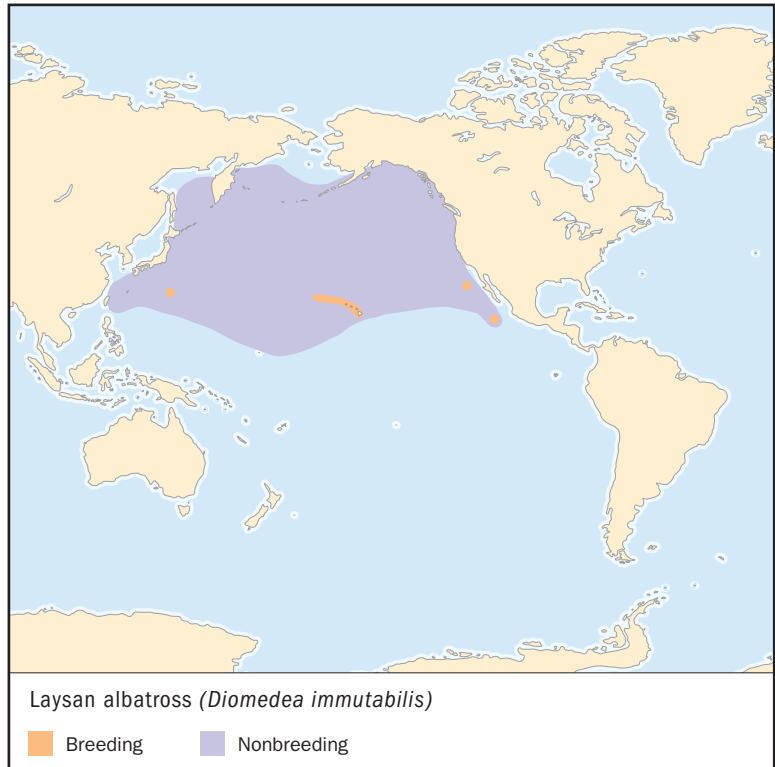
Behavior and reproduction: During both threat and courtship, the mollymawk makes shrill buzzing sounds with its open mouth. Chatham mollymawks lay one egg between the end of August and beginning of October each year. Both parents share incubation duties with individual turns lasting no longer than five days. The youngest known mollymawk to breed was seven years old. This albatross mates with one partner for life.

Chatham mollymawks and people: There is no known interaction between this species and humans other than what is generally known about human use of albatrosses.

Conservation status: The Chatham mollymawk is Critically Endangered, facing an extremely high risk of extinction in the wild, because it has only one breeding site. ■



Chatham mollymawks build their nests on rocky slopes and ledges at a place in the Chatham Islands known as "The Pyramid." (Illustration by Dan Erickson. Reproduced by permission.)



LAYSAN ALBATROSS

Diomedea immutabilis

Physical characteristics: Laysan albatrosses have a wingspan of 6.4 to 6.7 feet (1.95 to 2.03 meters) and weigh 5.3 to 9.0 pounds (2.4 to 4.1 kilograms). They are white in color with black patches at the wrist and elbow. There is a gray patch around the eyes and cheeks. The bill is yellowish orange at the base and fades into pink with a black tip.

Geographic range: Laysan albatrosses live almost exclusively in the Hawaiian Islands. Smaller populations live on the Bonin Islands in the west Pacific Ocean and in the eastern Pacific at Islas Guadalupe, Benedicto, and Clarion.

Habitat: Laysan albatrosses spend most of their time on the water, moving onto land only to breed.



Laysan albatross parents lay just one egg, and take turns sitting on it. Both parents help care for the chick. (© Frans Lanting/Photo Researchers, Inc. Reproduced by permission.)

Diet: Squid is the main staple of the Laysan albatrosses' diet, but they also eat fish eggs, fish, and crustaceans, marine life having no backbone. They are not known to follow fishing vessels as is the habit of other albatross species.

Behavior and reproduction: Laysan albatrosses have a wider range of displays than other albatrosses, and their communicative sounds have are distinct from those of other families. The nest is a hole in the ground that is built up around the rim using sand and other available debris. They lay one egg between the end of November and the end of December. Incubation lasts an average of sixty-four days, with parents taking turns, sometimes up to three weeks at a time.

Laysan albatrosses and people: The Laysan albatross is nicknamed the "gooney" and is a common sight in the countries surrounding the north Pacific Ocean.

Conservation status: The world population of Laysan albatrosses is around 607,000 pairs, although some colonies are decreasing due to commercial fishing and high levels of contaminants as well as plastic trash in the water. The species is considered Vulnerable, facing a high risk of extinction in the wild. ■

FOR MORE INFORMATION

Books:

Johnson, Sylvia A., and Frans Lanting. *Albatrosses of Midway Island*. Minneapolis: Lerner Publishing, 1990.

Safina, Carl. *Eye of the Albatross: Visions of Hope and Survival*. New York: Henry Holt and Company, 2003.

Periodicals:

Ramsayer, K. "Fossils of Flyers: Bones Tell Why Atlantic Albatross Disappeared." *Science News* (October 18, 2003): 244.

Web sites:

"The Albatross Project." Wake Forest University. <http://www.wfu.edu/albatross/> (accessed on May 13, 2004).

family CHAPTER

SHEARWATERS, PETRELS, AND FULMARS

Procellariidae

Class: Aves

Order: Procellariiformes

Family: Procellariidae

Number of species: 60 to 76
species

PHYSICAL CHARACTERISTICS

Procellariids (members of the family Procellariidae) have hooked bills that assist them in handling slippery food. The tubular (tube-shaped) nostrils are credited with the birds' well-developed sense of smell used for locating food from far away as well as nests in the dark.

These birds range from 9.1 to 11 inches (23 to 28 centimeters) to 31.9 to 39 inches (81 to 99 centimeters), depending on the species. Wingspans measure about 6.6 feet (2 meters). Procellariids are covered in white, blue, gray, brown, and black feathers. Unlike other wildlife, coloration does not vary by sex or season.

Because their legs are rather weak, procellariids are generally awkward on land. They do not actually walk, but rather shuffle on their breasts and wings. The exception to this is the giant petrel, whose legs are strong.

GEOGRAPHIC RANGE

Procellariids live on oceans throughout the world, in the Northern and Southern Hemispheres.

HABITAT

Procellariids live almost exclusively on the ocean, coming to shore only to breed.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**



FREQUENT FLYER MILES

Manx shearwaters migrate over 6,210 miles (10,000 kilometers) every winter on their way to South America. This is an amazing fact in and of itself, but consider how far the oldest known wild bird has flown. A Manx shearwater was tagged in Northern Ireland and identified as an adult (at least five years old) in 1953. It was trapped again in July 2003, making it at least fifty-five years old. Given that this Manx makes an annual migration of 6,210 miles, which means it has flown a minimum of 621,000 miles (1,000,000 kilometers) in its lifetime (fifty roundtrip flights of 12,420 miles [19,984 kilometers]).

DIET

These nocturnal, active at night, birds eat squid, plankton, and marine life that has been discarded from fishing vessels. Giant petrels also eat seal and penguin carcasses.

BEHAVIOR AND REPRODUCTION

Procellariids excel at flying, with equal ability to flap as well as soar, which makes finding and catching food easy. Shearwaters are named for their tendency to glide just over the water's surface.

Like other Procellariiformes, procellariids vomit their smelly stomach oil onto enemies. This defense mechanism is used against predators during breeding season and against humans who get too close.

Procellariids breed in locations near seawater. Although many species gather together to form breeding colonies, others breed alone or in much smaller colonies. Their nests are made of mounds of grass and stones or in the crevices of rock ledges, depending on the location and what building

material is available. Still other nesters burrow into the ground or use abandoned rabbit dens as home for their egg.

At the time of its first breeding the procellariid is usually around five or six years old. One egg is laid, and both parents take turns sitting on it in shifts lasting two to fourteen days. This goes on for six to nine weeks, depending on the species, and then the egg hatches. Parents care for the chick but leave it as soon as it is able to control its own body temperature, which is anywhere from two to twenty days after birth. At that time, parents visit the chick only at feeding time. A week or two after the parents leave, the chick heads out to sea.

These birds live for an average of fifteen to twenty years, though one is on record as living to the age of fifty.

SHEARWATERS, PETRELS, AND FULMARS AND PEOPLE

Procellariid eggs and meat are eaten by people in a number of cultures, including Eskimos and Europeans. Every year

several thousand chicks are harvested for their feathers, fat, flesh, oil, and down in New Zealand and Tasmania.

CONSERVATION STATUS

Some procellariid populations are thriving, but others are among the most threatened birds in the world. Forty-seven procellariids are on the World Conservation Union's (IUCN) List of Threatened Species. All are Threatened, facing a high to extremely high risk of extinction, or Near Threatened, in danger of becoming threatened. These species are considered threatened because of habitat deterioration as well as introduced, brought in by humans, predators.

SPECIES ACCOUNTS



MANX SHEARWATER *Puffinus puffinus*

Physical characteristics: Manx shearwaters weigh anywhere from 12.3 to 20.3 ounces (350 to 575 grams) and are 11.8 to 15 inches (30 to 38 centimeters) long. Their wingspan is 29.9 to 35 inches (76 to 89 centimeters). The upper body is black with white underneath.

Geographic range: Manx shearwaters breed mostly on the coastal cliffs around the North Atlantic Ocean, with a large population in Britain and Ireland. They spend the winter months off the coast of Brazil, Argentina, and Uruguay.

Habitat: Manx shearwaters burrow on offshore islands and coastal hills.

Diet: They eat mostly squid, crustaceans, and shoaling fish, small fish that travel in large schools.

Behavior and reproduction: Manx shearwaters glide along the ocean's waves and are known to dive and swim near the surface to feed. Breeding colonies can include hundreds of thousands of pairs of birds who gather at night, with the breeding season beginning in March. Although silent on the water, the calling of the birds at the breeding site is near deafening.

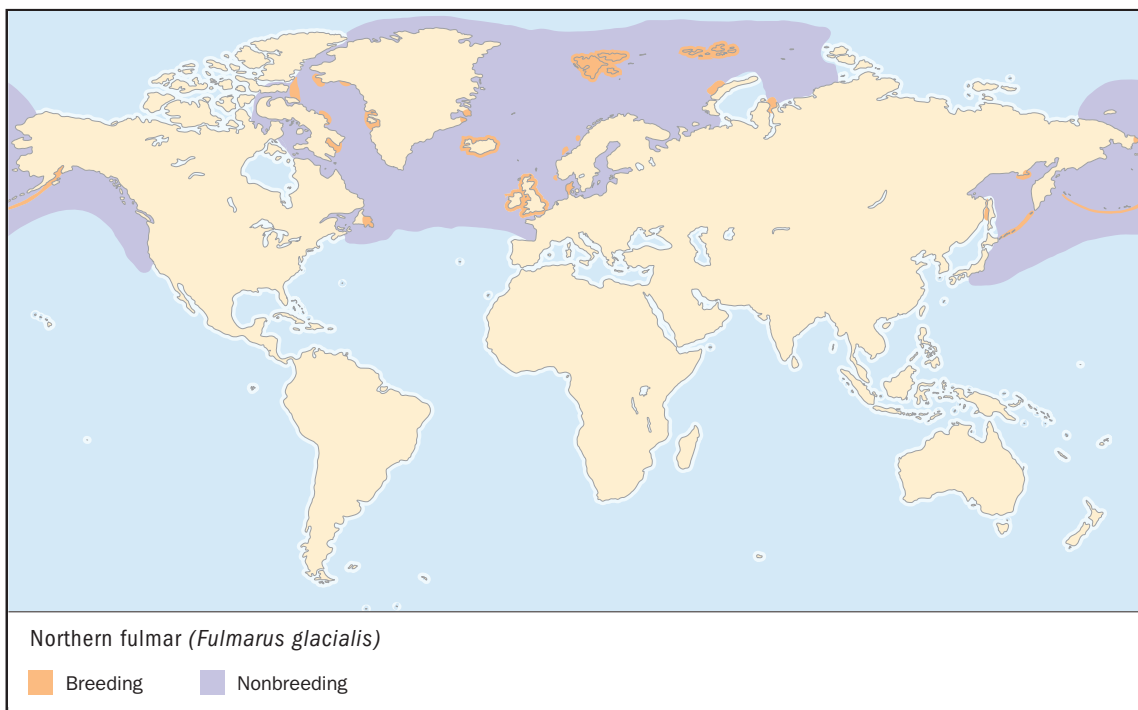
One egg is laid in mid-May and incubates, warmed by parents, for forty-seven to fifty-five days. Chicks fly on their own after sixty-two to seventy-six days. First breeding occurs at five or six years of age.

Manx shearwaters and people: The Manx shearwater used to be hunted for food, but today is basically left alone.

Conservation status: The Manx shearwater is not threatened. ■



Manx shearwaters glide along the ocean's waves and even dive into the water and swim near the surface to feed. (Illustration by Bruce Worden. Reproduced by permission.)



NORTHERN FULMAR

Fulmarus glacialis

Physical characteristics: One of the larger shearwaters, the northern fulmar is about 18 inches (46 centimeters) long, with a wingspan of 40.2 to 44.1 inches (102 to 112 centimeters). Northern fulmars resemble gulls, with gray upper bodies and white heads. However, their wings are broader, and the neck is thicker. Their bill is yellow.

Geographic range: Northern fulmars live in the northern Atlantic and Pacific Oceans. They breed in the Aleutian Islands of Alaska.

Habitat: Northern fulmars prefer the colder water of the Northern Hemisphere.

Diet: They feed on fish, squid, shrimp, plankton, and scraps tossed off of fishing boats. If this food is scarce, the northern fulmar will scavenge, eat, carrion, dead, rotting flesh.



Behavior and reproduction: Northern fulmars are more aggressive in their use of vomiting as a defense mechanism than are other procellariids. Although commonly confused with gulls, their flying patterns make them easy to distinguish. Northern fulmars hold their stiff wings straight out from their bodies after several quick wing beats, allowing them to glide rather than fly.

Breeding season begins in May, and nests are actually shallow, bowl-like depressions lined with vegetation. In some areas, the birds lay their eggs on bare rocks. A single egg is laid each year. Incubation lasts forty-seven to fifty-three days, and the parents care for the chick for the first two weeks. Chicks take their first solo flights around the age of forty-six to fifty-three days.

Northern fulmars and people: Although it was once hunted for food, the northern fulmar now has limited human interaction. It comes into contact with humans only on the occasions when it follows fishing vessels in search of food.

Conservation status: These birds are not threatened, although their populations have declined with the advent of modern fish processing

Northern fulmar nests are just shallow, bowl-like depressions lined with vegetation. They lay just one egg each year. (© Art Wolfe/Photo Researchers, Inc. Reproduced by permission.)

methods now used at sea. The innovation has reduced the amount of “waste” food thrown overboard. ■

FOR MORE INFORMATION

Books:

Serventy, Vincent. *Flight of the Shearwater*. Kenthurst, Australia: Kangaroo Press, 1997.

Warham, John. *Petrels: Their Ecology and Breeding Systems*. London and San Diego: Academic Press, 1990.

Web sites:

“Birds of Nova Scotia: Northern Fulmar.” Nova Scotia Museum of Natural History. <http://museum.gov.ns.ca/mnh/nature/nsbirds/bns0011.htm> (accessed on May 14, 2004).

“Manx Shearwater.” BBC. <http://www.bbc.co.uk/nature/wildfacts/factfiles/831.shtml> (accessed on May 14, 2004).

“Manx Shearwater.” eNature.com. <http://www.enature.com/fieldguide/showSpeciesSH.asp?curGroupID=1&shapelD=957&curPageNum=16&recnum=BD0666> (accessed on May 14, 2004).

“Northern Fulmar.” eNature.com. <http://www.enature.com/fieldguide/showSpeciesIMG.asp?imageID=17710> (accessed on May 14, 2004).

“Shearwaters.” NSW National Parks and Wildlife Service. <http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Shearwaters> (accessed on May 14, 2004).

family CHAPTER

STORM-PETRELS

Hydrobatidae

Class: Aves

Order: Procellariiformes

Family: Hydrobatidae

Number of species: 21 species

PHYSICAL CHARACTERISTICS

Storm-petrels are small seabirds that use their long legs to fend off the water as they snap up food from the surface. Like other procellariiforms (members of the order Procellariiformes), the storm-petrel has tubular nostrils that span almost half the length of the bill. The wings are rounded at the tip, and wing spans vary from about 12.6 inches to 22.4 inches (32 to 57 centimeters), depending on the species. They weigh from 0.7 ounces (20 grams) to 2.9 ounces (83 grams).

Their feathers are dark black or brown, and the storm-petrel's hind end is white. Tails are squared off at the end or forked, and all storm-petrels give off a musty smell characteristic of tubenoses. Females are larger than males.

GEOGRAPHIC RANGE

Though distributed throughout the world, storm-petrels are particularly plentiful in the Southern Ocean. While most species breed around Australasia (Australia and nearby Asian islands), five assemble around islands from Mexico to California. The birds can be found in all ocean waters.

HABITAT

Because they are small and dart around so quickly, it is difficult to identify the storm-petrel, so its habitats are not well known. All storm-petrels live solely in the ocean and retreat to land only during breeding season.

phylum

class

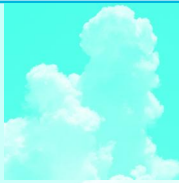
subclass

order

monotypic order

suborder

▲ family



RESURRECTION FROM THE DEAD

In late December 2003, two British men, Bob Flood and Bryan Thomas, announced that they had seen a New Zealand storm-petrel—believed to have been extinct since 1850.

The New Zealand storm-petrel had not been seen since 1850, when its population was decimated by rats. Experts later confirmed that the bird had survived undetected, on a predator-free island. According to BirdLife International, eleven more New Zealand storm-petrels were detected in mid-January 2004 and were filmed for television.

DIET

Crustaceans, freshwater or saltwater animals without backbones, are key foods in the storm-petrel's diet. Depending on where the petrels are, they may supplement their diet with other marine life as well. They tend to like oily foods, and their stomachs contain the oil found in most tubenoses. This oil is used not only for warding off intruders, but as a food source for adults and chicks when other food supplies are scarce.

They feed just below the surface of the water, and though they seem to prefer eating alone, they will gather together around larger food sources such as a dead squid. Storm-petrels follow fishing vessels, eating the food scraps that spray up from the propellers.

BEHAVIOR AND REPRODUCTION

The nests are burrows, holes in the ground, which, once built, are retained each season. The same pair returns to this nest year after year. Nests are visited at night,

when there are fewer predators, animals that hunt them for food. Unlike some other procellariiforms, storm-petrels do not engage in fancy courtship displays or rituals.

Storm-petrels have a variety of calls that vary between males and females. These birds tend to be solitary, alone, though some flocking occurs.

Storm-petrels are monogamous (muh-NAH-guh-mus), having only one mate, and begin breeding at four or five years of age. Breeding sites are chosen according to their location in relation to water and food. Some female storm-petrels participate in what is known as the "prelaying exodus." During this period they feed at sea while producing their single egg, which allows them to reach the best feeding area before returning to the nest. Once back at the nest, she lays her egg within twenty-four hours.

The burrow nests are usually made by the males. The burrow is usually at the end of a tunnel, and parents take turns sitting on the egg anywhere from two to four and a half days.

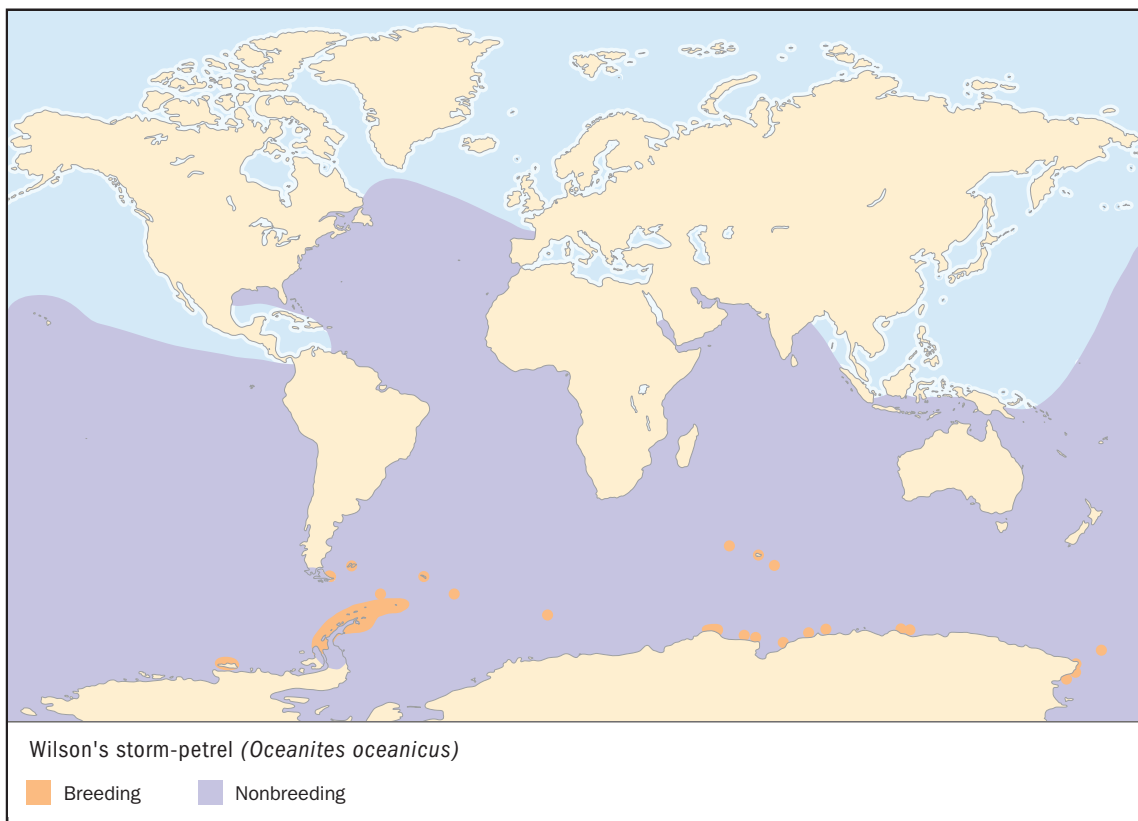
This goes on typically for thirty-eight to forty-two days. The down-covered chick is hatched and attended to by its parents until it can control its own body temperature. At that point, parents visit the chick only to feed it. The chick can go six to seven days without food.

STORM-PETRELS AND PEOPLE

Seamen and fishermen have traditionally caught storm-petrels and used them as bait. This was easy to do since the birds tend to gather around fishing vessels. Native Americans were known to eat storm-petrels.

CONSERVATION STATUS

No storm-petrel is threatened, although a few of the harder-to-track species need further investigation. Predators have wiped out entire colonies, but this has not yet threatened the species.



SPECIES ACCOUNT

WILSON'S STORM-PETREL *Oceanites oceanicus*

Physical characteristics: The feathers of this 7-inch (18-centimeter), 1.3-ounce (35-gram) bird are completely black except for a white hind-end. The pale coloring reaches across its lower thighs, and there is a band of it across each wing. Even the long legs and bill are black. There is no difference in coloration or size between the males and females.

Geographic range: Wilson's storm-petrels breed on the shores of Antarctica and nearby islands. They are common in the North Atlantic Ocean. Wilson's storm-petrels can be found in all oceans but they avoid the Arctic seas. They come ashore only to breed.

Habitat: Wilson's storm-petrels congregate, gather, along the ocean shelves during the northern summer, and most move back to southern waters to breed.

Diet: Although crustaceans are the preferred food, Wilson's storm-petrels will also eat fish, which has a higher energy content than crustaceans. They find their food by running on top of the water, wings outstretched, and pecking at prey swimming just below the surface. If necessary, the bird will immerse its entire head in the water to catch food.

Behavior and reproduction: Wilson's storm-petrels like to eat in groups, and they are notorious boat followers. These birds are highly migratory, move seasonally, and will travel thousands of miles each year in search of abundant food supplies. Although there is no evidence that petrel pairs remain together throughout migration, they do seem to maintain their bond for several seasons so that the same pair returns to the same nest year after year.

Most nests are built in rock crevices, and the single egg is laid on bare earth in a shallow "bowl" nest in mid-December. The eggs hatch after forty days of incubation, sitting on and warming the eggs for chick development, during which parents take forty-eight hour shifts. Chicks fly on their own for the first time between forty-eight and seventy-eight days old.

Wilson storm-petrels and people: The only interaction with humans occurs when the birds follow fishing boats. Early sailors used to kill Wilson's storm-petrels from the stern of the ship. The birds were attracted to the light, making it easy for them to be caught. Seal hunters would thread wicks through the birds to extract the stomach oil, which would then be used as a candle.

Conservation status: Wilson's storm-petrel is one of the most abundant birds, due in large part to its isolation from humans. When chicks die, it is usually due to snow covering the entrance to the nest, which makes it impossible for parents to get food to their chicks. ■



Wilson's storm-petrels find their food by running on top of the water, wings outstretched, and pecking at prey swimming just below the surface. (Illustration by Bruce Worden. Reproduced by permission.)

FOR MORE INFORMATION

Books:

Enticott, Jim, and David Tipling. *Seabirds of the World: the Complete Reference*. Mechanicsburg, PA: Stackpole Books, 1997.

Harrison, Jim. *Seabirds of the World: a Photographic Guide*. Princeton, NJ: Princeton University Press, 1996.

Parkinson, Brian, and Tim Lovegrove. *Field Guide to New Zealand Storm Birds*. New Holland: Struik, 2001.

Web sites:

Kirby, Alex. "NZ Seabird Returns 150 Years On." BBC Online. <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/3344917.stm> (accessed on May 13, 2004).

"New Zealand Petrel Causes Storm." BirdLife International. http://www.birdlife.net/news/news/2004/02/nz_storm-petrel.html (accessed on May 13, 2004).

"Storm-petrel." Science Daily. http://www.sciencedaily.com/encyclopedia/storm_petrel (accessed on May 13, 2004).

"Wilson's Storm-petrel." Australian Government, Australian Antarctic Division. <http://www.antdiv.gov.au/default.asp?casid=1648> (accessed on May 13, 2004).

"Wilson's Storm-Petrel." eNature.com. <http://www.enature.com/fieldguide/showSpeciesFT.asp?fotogID=568&curPageNum=3&recnum=BD0248> (accessed on May 13, 2004).

family CHAPTER

DIVING-PETRELS Pelecanoididae

Class: Aves

Order: Procellariiformes

Family: Pelecanoididae

Number of species: 4 species

PHYSICAL CHARACTERISTICS

Diving-petrels are small, tubenosed seabirds that dive and swim to catch their food. They weight 4 to 8 ounces (120 to 220 grams) and are 7 to 10 inches (18 to 25 centimeters) long. Unlike other tubenoses, the tube-like nostrils of the diving-petrel project upward rather than forward. Scientists believe this is an adaptation, change over time, to diving. The bill is short and wide, with a slight hook at the tip. The short wings are used as flippers to help move the bird forward. Feathers are bluish-gray or black with white on the underside. When the birds molt, shed their feathers, they are unable to fly until new feathers grow in.

GEOGRAPHIC RANGE

Diving-petrels live in the waters of the Southern Hemisphere. Although they prefer shallow coastal waters, they have been sighted offshore as well.

Peruvian and Magellan diving-petrels live in South American waters, while the common and South Georgian species are circumpolar, living at both the North and South Poles.

HABITAT

Diving-petrels prefer the colder temperatures of the ocean waters. They breed on oceanic islands and do not stray far from breeding sites.

DIET

Diving-petrels get their name from their habit of diving for their food, mainly small fish and crustaceans such as crabs and

phylum

class

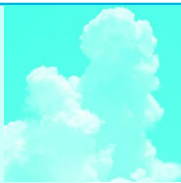
subclass

order

monotypic order

suborder

▲ family



ECOTOURISM: PUTTING YOUR MONEY WHERE YOUR MOUTH IS

According to The International Ecotourism Society (TIES), ecotourism is “responsible travel to natural areas that conserves the environment and improves the well-being of local people.” Ecotourism benefits animal life in many ways. First, some money goes toward the cost of maintaining wildlife populations and habitats. Second, ecotourists are more likely to invest time or money into the part of the environment that they are concerned about.

Birds like diving-petrels do not interact directly with humans. But by attracting people who travel to watch birds, petrels indirectly benefit the regions where they live by bringing in revenue, money, to help sustain an environmental balance.

shrimp. They use their wings to propel themselves under water toward their food. Once their prey is caught, the diving-petrels use their wings to push themselves toward the waters’ surface and directly back into the air.

BEHAVIOR AND REPRODUCTION

Diving-petrels are the only tubenoses that dive into the water to catch food. They typically fly low and fast over the water, and in stormy weather, often fly right into the crests of waves rather than fly over them. These birds are social, eating and breeding in herds and colonies. They come to land only to breed.

Diving-petrels nest in burrows, holes, or in the crevices of rocks. The female lays one egg that incubates, warms, for eight weeks. Both parents take turns sitting on the egg, usually for day-long periods. Eggs are laid between July and December, and newborn chicks are watched closely for the first two weeks of life. The chick will make its first flight around eight weeks, and at that time, begins to take care of itself.

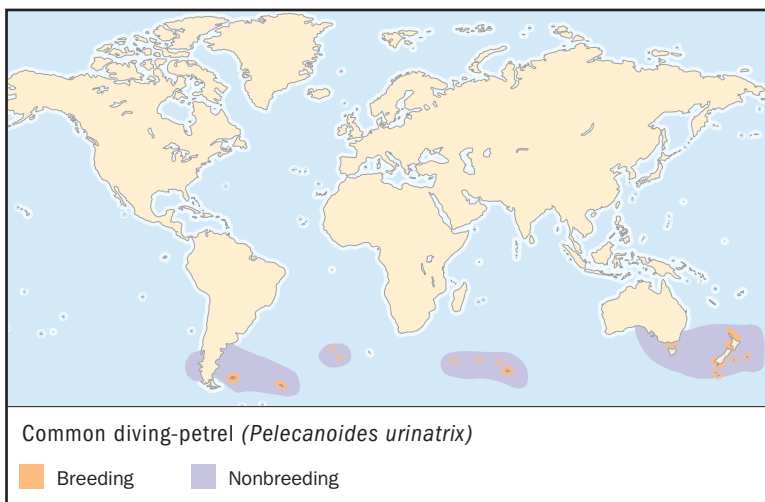
Diving-petrels molt after the breeding season is over, and until their flight feathers grow back, they are flightless.

DIVING-PETRELS AND PEOPLE

Diving-petrels and people do not interact. The birds do attract birdwatchers, so they benefit marine ecotourism, travel in order to study wildlife and the environment.

CONSERVATION STATUS

Except for the Peruvian diving-petrel, these birds are not threatened. The Peruvian diving-petrel is Endangered, facing a very high risk of extinction in the wild, due to excessive hunting and habitat destruction.



COMMON DIVING-PETREL

Pelecanoides urinatrix

SPECIES ACCOUNT

Physical characteristics: Common diving-petrels are 8 to 10 inches (20 to 25 centimeters) long with a wingspan of 13 to 15 inches (33 to 38 centimeters). They have the same bluish gray or darker and white coloration as other diving-petrels, and their legs and feet are bright blue. Their feet get even brighter during mating season. Their nostrils project upward.

Geographic range: Common diving-petrels are found in the Southern Ocean between 35 and 55° South latitude. They breed on islands off Australia, New Zealand, Chile, Argentina, and in the south Atlantic and Indian Oceans.

Habitat: Common diving-petrels feed in colder ocean waters close to breeding sites. They breed on oceanic islands.

Diet: Common diving-petrels dive into water to catch small fish and crustaceans such as crabs and shrimp.

Behavior and reproduction: These social birds fly low and fast through both air and water. The female lays a single egg in her burrow or crevice, and the egg is incubated for eight weeks by both parents.

Scientists estimate the lifespan of the common diving-petrel to be three to four years. Kelp gull, giant petrels, and skuas, aggressive birds

that feed on smaller species, feed on these smaller birds, remove large numbers from the population each year.

Common diving-petrels and people: Bird watching of the common diving petrel benefits the ecotourism trade.

Conservation status: Common diving-petrels are not threatened. ■

FOR MORE INFORMATION

Books:

Parkinson, Brian, and Tim Lovegrove. *Field Guide to New Zealand Seabirds*. London: New Holland Publishers, 2001.

Warham, John. *The Behaviour, Population Biology and Physiology of the Petrels*. London and San Diego: Academic Press, 1996.

Web sites:

"Birding." Birdwatching.com. <http://www.birdwatching.com/birdingfaq.html> (accessed on May 26, 2004).

"Common diving-petrel." Australian Government, Department of the Environment and Heritage. <http://www.antdiv.gov.au/default.asp?casid=1552> (accessed on May 26, 2004).

monotypic order

CHAPTER

PENGUINS

Sphenisciformes

Class: Aves

Order: Sphenisciformes

One family: Spheniscidae

Number of species: 17 species



PHYSICAL CHARACTERISTICS

Penguins have large heads and long bodies. They resemble humans when they waddle around on their two webbed feet. Their short feathers, which provide excellent insulation against the cold water and air temperatures, are black on their backs and white on their chests, giving the appearance of a tuxedo. Their wings are stiff flippers that help them navigate the ocean waters.

Species vary in size, so penguins can weigh less than 3 pounds (1.1 kilograms) or as much as 88 pounds (40 kilograms). They can stand less than 18 inches (45 centimeters) high, or almost 4 feet (115 centimeters) tall. Males are somewhat bigger than females, but look similar otherwise.

Penguins cannot fly and their bones are much more solid and heavy than those of most birds. This is an adaptation that allows them to dive for food. Penguins differ from other birds in that, except for a patch on their bellies, their entire bodies are covered with feathers. Birds usually have feathers growing only in certain sections of skin.

GEOGRAPHIC RANGE

The Galápagos penguin lives just north of the equator, but all other species live in the southern half of the world. Although many equate the penguin with Antarctica, more than half of the seventeen penguin species are never seen there.

HABITAT

Although penguins spend most of their time diving for food, they do venture on land to rest, breed, and raise their young.

phylum

class

subclass

order

● **monotypic order**

suborder

family



DID YOU KNOW?

- The feathers of penguin chicks aren't weatherproof, but those of the adults are.
- Macaroni penguins got their name because of the feathers on their head, which make them look like the well-dressed men of eighteenth-century London who were the focus of the song "Yankee Doodle Dandy."
- Since their nests aren't very protective, female penguins eat more clams and mussels during the breeding season to elevate their calcium levels. This extra calcium makes their eggshells thicker.
- Penguins can swim at speeds of up to 15 miles per hour (24 kilometers per hour)!
- A penguin has more than seventy feathers per square inch (6.5 square centimeters) of skin.

Breeding colonies are usually near the shore, though some species move as far as 2 miles (3 kilometers) inland. Some breeding habitats are in snow, while others are on tropical islands.

DIET

Penguins eat squid, fish, and crustaceans such as crabs and shrimp. What they prefer depends on the species. When they are hunting prey, penguins dive deep and stay underwater for long periods of time. Depending on the species, they can stay underwater for less than a minute up to eighteen minutes at depths ranging from 98 feet (30 meters) to 1,755 feet (535 meters).

BEHAVIOR AND REPRODUCTION

The social penguin likes to live in groups of various sizes. They are rarely without each other's company and so have developed behaviors that allow them to live harmoniously for the most part. When they do fight, penguins use their flippers for hitting and their bills are used like swords.

Most penguins are somewhat monogamous (muh-NAH-guh-mus; have one mate), though they have been known to "divorce" and find new mates when a new breeding season begins. They engage in mating rituals and are able to find their mates in a crowd based on these rituals as well as by voice. Penguins are ready to breed between the ages of two and five years, with the female being ready somewhat earlier than the male.

Depending on the species, penguins lay one to three eggs. The incubation period lasts from thirty-three to sixty-four days, and chicks will hatch at the same time or within one day of each other. Once born, parents take turns caring for the chicks and hunting for food. The food-provider eats the prey, then regurgitates (re-GER-jih-tates; vomits) it for the chicks to eat. Once the chicks are old enough to eat and take care of themselves, parents continue to protect them.

Though adult penguins have no land predators, they do fall prey to sharks, leopard seals, sea lions, and killer whales. On land, chicks and eggs are often eaten by other birds.

In the wild, penguins can live up to twenty-five years.

PENGUINS AND PEOPLE

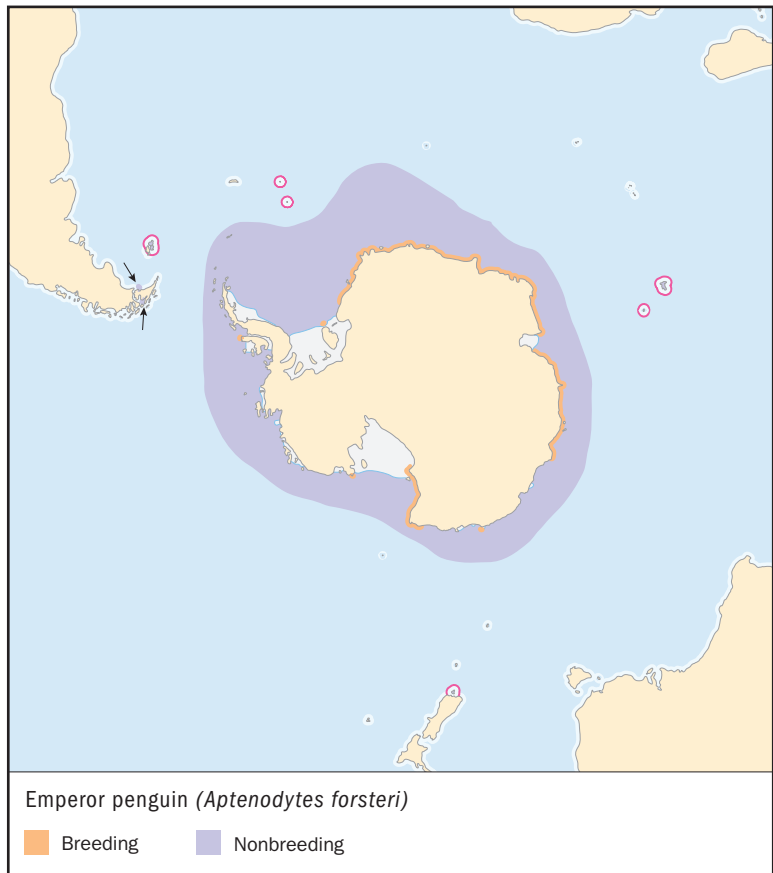
Historically, penguins were killed for food and the extraction of the oil that lay in their fat. The oil was used for lighting and fuel. Penguins are easy prey because they are not afraid of humans and so are easily captured. In the days of the explorers, it was common for the adventurers to kill three thousand penguins a day for food.

Despite protection, penguins are still illegally hunted for use as bait and as a food source.

CONSERVATION STATUS

Twelve species are included on the 2003 IUCN Red List of Threatened Species. The Galápagos, erect-crested, and yellow-eyed penguins are Endangered, facing a very high risk of extinction; seven species are Vulnerable, facing a high risk of extinction; and two are Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



EMPEROR PENGUIN *Aptenodytes forsteri*

Physical characteristics: The largest of the seventeen species, the emperor penguin, measures 39.4 to 51.2 inches (100 to 130 centimeters) in height. The male weighs 48.3 to 88 pounds (21.9 to 40 kilograms), while the female weighs 44.5 to 70.5 pounds (20.2 to 32 kilograms). The head, chin, and throat are black and there are bright yellow patches on the ears. The upper bill is black, the lower bill is pink, orange, or light purple.

Geographic range: Antarctica and nearby islands. The emperor is the only penguin that stays on the Antarctic continent year-round.



The emperor penguin is the only penguin that lives on Antarctica year-round. Males keep the eggs warm for over two months, and don't eat during that time. (© Art Wolfe/Photo Researchers, Inc. Reproduced by permission.)

Habitat: Emperor penguins live in the frigid Antarctic waters and breed on sea ice sheltered by ice cliffs.

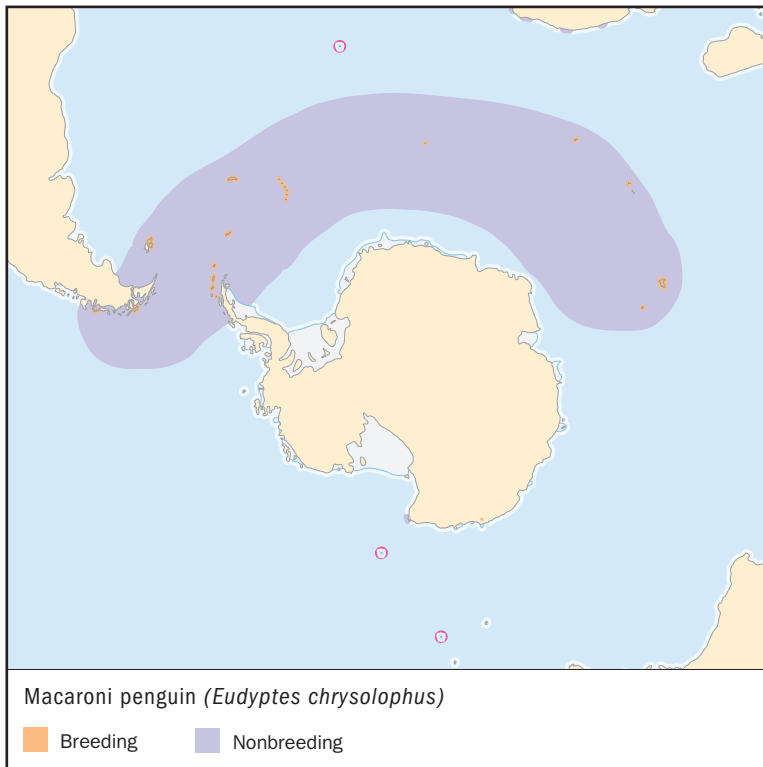
Diet: These birds eat small fish and crustaceans such as shrimp. Emperors are the deepest divers, and one researcher reported a dive that reached 1,755 feet (535 meters). The longest dive time on record is eighteen minutes. This species can spend sixty to seventy days at sea at one time, searching for food.

Behavior and reproduction: Emperor penguins breed in colonies. The female lays her egg and takes off to feed at sea. The egg is balanced on the father's feet, where he will protect it with his brood pouch for about sixty-five days. He withstands blizzards and icy temperatures for over two months and eats nothing the entire time.

Mothers return soon after the chicks hatch and parents take turns feeding and caring for the babies. Chicks leave the colonies at around five months of age.

Emperor penguins and people: When people think of penguins, it's usually the image of an emperor penguin that comes to mind. These birds are great attractions for the ecotourism industry (tourism that tries not to impact the environment while supporting local human populations).

Conservation status: These birds are not threatened. ■



MACARONI PENGUIN

Eudyptes chrysolophus

Physical characteristics: Both sexes are about 27.9 inches (71 centimeters) in height. Males weigh 8.2 to 14.1 pounds (3,720 to 6,410 grams) and females weigh 7.0 to 12.6 pounds (3,180 to 5,700 grams). Macaroni penguins have long yellow and orange feathers growing from the middle of their foreheads that look like eyebrows. The head and cheeks are black or dark gray, and the back is black. The breast, belly, and rump patch are white. Their eyes are dark red.

Geographic range: Macaroni penguins are found on Antarctica and neighboring islands. They remain in subantarctic waters during nonbreeding season.

Habitat: Macaroni penguins nest on steep terrain with little or no vegetation.



Macaroni penguins breed in large colonies. Mates recognize each other by their calls. (Illustration by Patricia Ferrer. Reproduced by permission.)

Diet: They eat crustaceans, squid, and fish.

Behavior and reproduction: Macaroni penguins breed in large colonies of up to more than one hundred thousand birds. They're noisy during breeding season, and it is by their individual calls that mates are able to recognize one another.

The female lays two eggs in her shallow nest, which is made by scraping in mud or gravel. The second egg, which is larger than the first, is usually the only one to survive. Parents take turns warming and protecting the egg. Within four to five weeks, the chick is born, and it survives on regurgitated food for the first month. In about ten weeks, they head out on their own.

At sea, adult penguins must be on the lookout for Leopard seals, killer whales, and sea lions. On shore, eggs and chicks are eaten by petrels, skuas, and gulls.

Macaroni penguins and people: Humans are actually the biggest threat to these birds due to the overhunting of krill, which is their primary food source.

Conservation status: This species is listed as Vulnerable due to habitat loss and pollution. ■



MAGELLANIC PENGUIN

Spheniscus magellanicus

Physical characteristics: Although both sexes measure 28 inches (71 centimeters), the male weighs more (5.9 to 9.0 pounds [2.7 to 4.1 kilograms]) than the female (6.4 to 10.6 pounds (2.9 to 4.8 kilograms)). This penguin has two black strips across its white chest. The cheeks and cap are brownish black, and the white under parts are speckled with black. The brown eyes look out over a short black bill. Feet are pink with black spots.



Magellanic penguins often return to the same nesting site every year. (Illustration by Patricia Ferrer. Reproduced by permission.)

Geographic range: This bird lives in central Chile and Argentina, south to Cape Horn and the Falkland Islands. Magellanic penguins migrate (travel to another region seasonally) from April to August. Those at the tip of South America travel as far north as Peru and Brazil.

Habitat: Magellanic penguins breed on islands in flat areas as well as on cliffs. They feed close to shore during breeding season.

Diet: This bird prefers schooling fish and squid.

Behavior and reproduction: Like other penguins the Magellanic species breeds in large colonies. They often return to the same nesting site year after year. This bird nests in burrows where possible, in ground nests when not. Both sexes build the nest and share all incubation and parenting duties. The chick from the second laid egg is less likely to survive than its older sibling. The chicks are fed regurgitated food every two to three days.

Magellanic penguins and people: Once hunted for meat and skins, this penguin is a major attraction for ecotourists at Punta Tombo in Argentina.

Conservation status: Magellanic penguins are listed as Near Threatened by the IUCN. Oil pollution is the biggest threat to this species, though their numbers are still in the millions. ■

FOR MORE INFORMATION

Books:

Lanting, Frans, and Christine Eckstrom. *Penguin*. Cologne, Germany: Taschen, 1999.

Naveen, Ron. *Waiting to Fly: My Escapades with the Penguins of Antarctica*. New York: HarperTrade, 2000.

Schafer, Kevin. *Penguin Planet: Their World, Our World*. Hopkins, MN: Northword, 2000.

Swan, Erin Pembrey, et al. *Penguins: From Emperors to Macaronis (Animals in Order)*. Franklin Watts, 2003.

Periodicals:

Stricherz, Vince. "Penguins Ingest Mollusk Shells to Obtain Calcium for Thicker Shells." *University of Washington News* (May 11, 2004). Online at <http://www.uwnews.org/article.asp?articleID=4281> (accessed on May 12, 2004).

Web sites:

Antarctica and Southern Ocean Coalition. <http://www.asoc.org/> (accessed on July 14, 2004).

Defenders of Wildlife. <http://www.defenders.org/> (accessed on July 14, 2004).

"Emperor Penguins Fun Facts." National Geographic Kids. http://www.nationalgeographic.com/kids/creature_feature/0101/penguins2.html (accessed on May 12, 2004).

"Longevity and Causes of Death." Seaworld. <http://www.seaworld.org/infobooks/Penguins/longevity.html> (accessed on May 12, 2004).

"Magellanic." The Penguin Taxon Advisory Group. http://www.penguintag.org/species_index_magellanic.htm (accessed on May 12, 2004).

"Magellanic Penguin." San Francisco Zoo. <http://www.sfbay.org/cgi-bin/animals.py?ID=54> (accessed on May 12, 2004).

"Spheniscidae-Penguins." EarthLife. <http://www.earthlife.net/birds/spheniscidae.html> (accessed on May 12, 2004).

"Wildlife of Antarctica: Macaroni Penguin." Antarctic Connection. <http://www.antarcticconnection.com/antarctic/wildlife/penguins/macaroni.shtml> (accessed on May 12, 2004).

"The World of Penguins." Public Broadcasting Service (PBS). <http://www.pbs.org/wnet/nature/penguins/> (accessed on May 13, 2004).

World Wildlife Fund. <http://www.worldwildlife.org> (accessed on July 14, 2004).

LOONS

Gaviiformes

Class: Aves

Order: Gaviiformes

One family: Gaviidae

Number of species: 5 species



monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

The anatomy of the loon is specifically geared toward its need to capture fish. Its body is torpedo-shaped, and its neck is thick but longer than the average water bird. There are three toes on each of the two webbed feet, and the legs are toward the back of the body. Though the loons' underparts are totally white, the upperparts are dark gray or black, and the wings have a black-and-white checked pattern on them. All loons have red eyes and long beaks.

Adults range from 2.2 to 13.8 pounds (1 to 6.3 kilograms) and measure about 3 feet (almost 1 meter) long. Males are slightly larger than females.

GEOGRAPHIC RANGE

All species migrate (move region to region, seasonally) to warmer temperatures around the Gulf of Mexico and to the east and west coasts of North America during nonbreeding season. They also migrate to the Mediterranean Sea and coastal China. Alaska is the only region in which all five species can be found.

HABITAT

Loons can be found in inland lakes and tundra ponds. Less often they are seen in large freshwater lakes and rivers during the winter months.

DIET

Loons eat mostly medium-sized fish (7 to 8 inches, or 18 to 20 centimeters). Young loons are fed worms, mollusks, and crustaceans such as freshwater shrimp and crayfish.

Loons peer into the water, often with their bills submerged, and dive. Most food is eaten underwater, as loons can remain below the surface for more than a minute. Though most food is caught close to the surface, they may dive as deep as 230 feet (70 meters) if the water is clear enough. Loons eat a lot; a pair can consume 2,000 pounds (910 kilograms) of fish in one breeding season.

BEHAVIOR AND REPRODUCTION

The loon is famous for its vocalizations, which have been described as eerie and haunting. The type of sound—a cry, wail, cackle, or laugh—depends on the species. Vocalizing is usually done on the breeding ground.

Loons are awkward on land because their feet are set so far back on their bodies. In order to fly, they need a good deal of land from which to take off; larger loons need as much as a quarter-mile (400 meters) to get a good start. They are powerful flyers, though, and have been clocked at 60 miles per hour (97 kilometers per hour).

Loons are monogamous (having just one mate) and mate for life, but are quick to replace that mate should it get lost. Both sexes build the nest, and they often return to that same nest every year. Nests are made of wet vegetation on land, or as a floating mat. Usually two eggs are laid, and parents work together to incubate them, or keep them warm. Incubation lasts twenty-four to thirty days. Chicks depend on parents for food but start diving on their own at three days old. In six to eight weeks, they can fly. Adult loons have few predators, but chicks make a fine meal for snapping turtles, eagles, gulls, and crows.

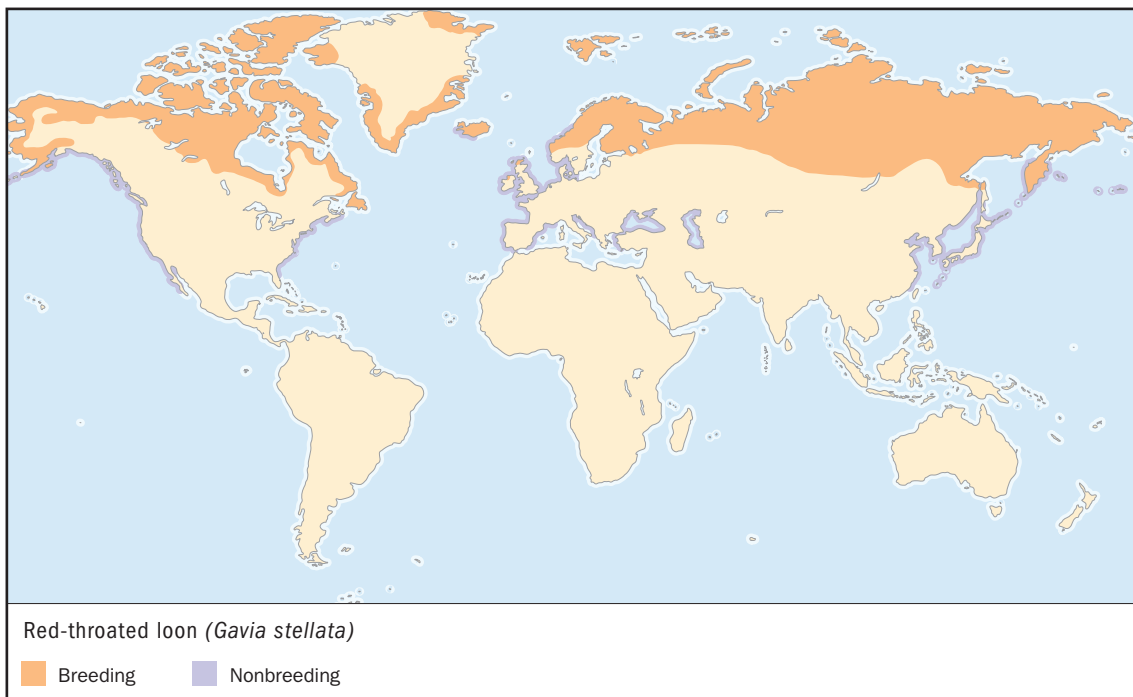
LOONS AND PEOPLE

People are attracted to loons because of the birds' vocalizations. Thousands of tourists flock to the northwoods each year to hear the loons. In this way, loons are beneficial to the tourist industry of these regions. On the flip side, the other human activities involved in these vacations, such as canoeing, are

threatening to the birds. When canoes hit the waters of Lake Superior, for example, the loons panic and over-react by abandoning their nests and any eggs in them. Often, they do not return, so the eggs die.

CONSERVATION STATUS

No species of loon is threatened.



RED-THROATED LOON

Gavia stellata

SPECIES ACCOUNTS

Physical characteristics: These loons measure anywhere from 20.8 to 27 inches (53 to 69 centimeters) in length and are the smallest of the loon family. In summer, the red-throated loon's head is gray, the neck is striped, and there is a bright red patch at the front of its neck. In winter, the head and neck are gray on top with a white underside. The bill is black, and the belly is white. The loon's back is always black.

Geographic range: Red-throated loons summer in the tundra and along arctic coastlines. Winters are spent in the Great Lakes region and along the northern coasts of the Atlantic and Pacific Oceans. The birds are also found in the Caspian, Black, and Mediterranean Seas.

Habitat: The red-throated loon is seldom seen far from saltwater. It can be found in estuary (combination of salt water and fresh water) waters at the mouths of rivers. Breeding takes place in freshwater lakes and ponds.



Red-throated loons usually lay two eggs, and one chick hatches first. If food is scarce, they may feed just the first chick, and the younger chick dies. (Illustration by Marguette Dongvillo. Reproduced by permission.)

Diet: These birds eat medium-sized fish, preferring marine (salt water) fish to freshwater food.

Behavior and reproduction: This is the only loon that can take off for flight from land because it doesn't require a running start from water. It is also the only loon species to vocalize in pairs, as mated couples do on breeding ponds. The call is a long, low-pitched whistle with individual notes interspersed, and both mates call at the same time.

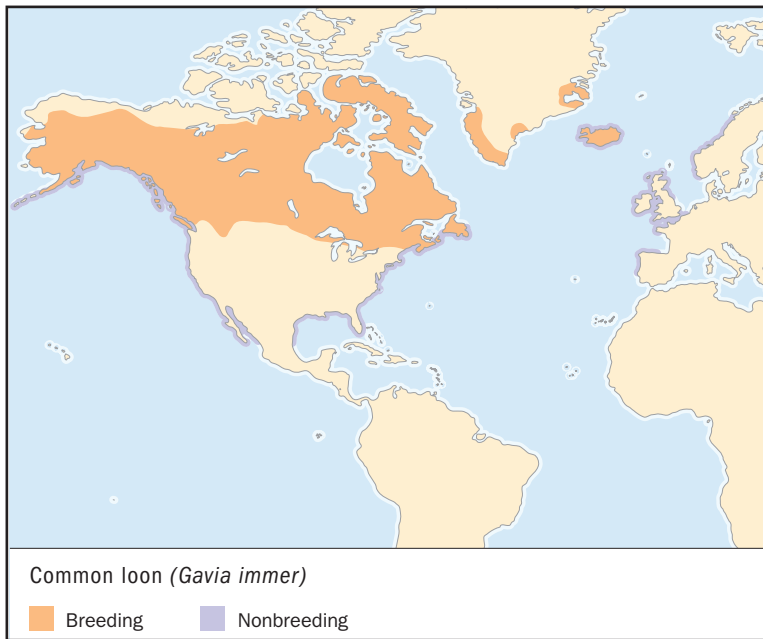
Although the male chooses the nest site, both parents build the nest from plant matter. Nests are made close to the water's edge because loons have difficulty walking on land. Mating, however, takes place on land. Breeding occurs May through September, and incubation lasts twenty-four to twenty-seven days. Two eggs are usually laid and incubation begins immediately. This means that the first egg is larger, so the first chick is usually the healthier of the two. When food is scarce, the

second-born chicks often starve to death.

Red-throated chicks are ready to breed between two and three years of age, and they have been known to live twenty-three years in the wild.

Red-throated loons and people: Inuit legally hunt around 4,600 loons of all species each year for food and skin. Red-throated loon skin is often used to make ceremonial dresses.

Conservation status: Though not threatened, these loons are vulnerable to oil spills and heavy metal pollution. The red-throated loon population is declining, though specific reasons are not known. ■



COMMON LOON

Gavia immer

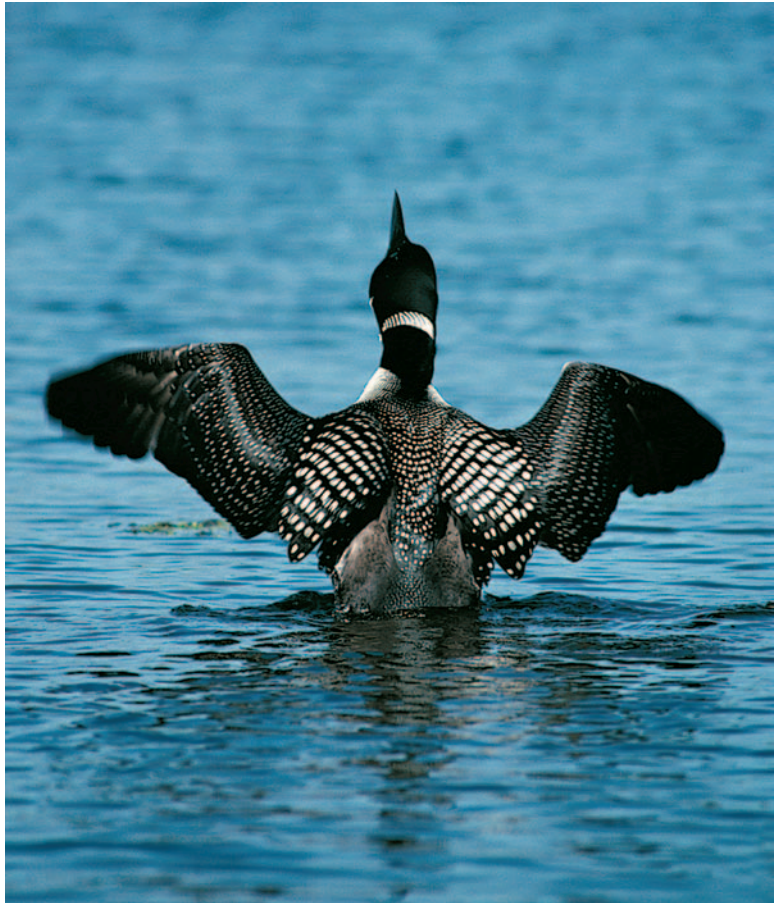
Physical characteristics: The common loon stands about 26.0 to 35.8 inches (66 to 91 centimeters) and weighs 5.5 to 13.4 pounds (2.5 to 6.1 kilograms). Underparts are white, upperparts are black with white checks and spots. The head is black, and the neck is black with white striping.

Geographic range: This species breeds throughout Alaska, Canada, northern New England, northern Midwest, and parts of Greenland and Iceland. It winters in the Pacific and Atlantic Oceans.

Habitat: Common loons breed in clear lakes and tundra ponds. The common loon winters mostly on coastal waters within 62 miles (100 kilometers) of shore. It also occasionally winters on inland lakes and rivers.

Diet: These birds eat mainly fish such as perch and bullhead as well as invertebrates such as snails and crayfish. They will eat vegetation when other food is scarce.

Common loons stretch, remove water, and signal with this motion. (© Gregory K. Scott/Photo Researchers, Inc. Reproduced by permission.)



Behavior and reproduction: During migration and winter, common loons are found in loose flocks or singly. They prefer large lakes because they require 100 to 650 feet (30 to 200 meters) for takeoff. Common loons are territorial on breeding grounds and will chase off intruders. Their call resembles a yodel, a series of repeated two-note phrases, and is used to defend territory.

Common loons nest farther south than other loons from May to October. They build their nests using vegetation at the edge of a lake. Two eggs are laid and incubated by both parents from twenty-seven to thirty days. Newborns can leave the nest at one day of age and are able to fly at eleven weeks. Chicks and eggs fall prey to gulls, crows, weasels, skunks, raccoons, and snapping turtles. Common loons live for up to thirty years in the wild.

Common loons and people: Human activity upsets the loon, and waterskiiers, boaters, and pets are taking their toll on the loon

population. The increased number of houses being built along lakeshores is destroying loon habitat. Loons are also being found with alarmingly high mercury levels in their bodies. The mercury comes from lead fishing tackle as well as pollution.

Conservation status: The common loon is not threatened, though many conservation efforts are underway to keep populations stabilized. ■

FOR MORE INFORMATION

Books:

Klein, Tom. *Voice of the Waters: A Day in the Life of a Loon*. Minocqua, WI: NorthWord Press, 1999.

Love, Donna. *Loons: Diving Birds of the North*. Missoula, MT: Mountain Press Publishing Company, 2003.

Silliker, Bill Jr. *Just Loons: a Wildlife Watcher's Guide*. Minocqua, WI: Willow Creek Press, 2003.

Web sites:

"All About Loons." Northern Wisconsin. <http://www.northernwisconsin.com/loons.htm> (accessed on May 13, 2004).

"*Gavia stellata*." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Gavia_stellata.html (accessed May 15, 2004).

Guynup, Sharon. "Loons Sound Alarm on Mercury Contamination." National Geographic. http://news.nationalgeographic.com/news/2003/05/0516_030516_tvloons.html (accessed on May 13, 2004).

"Journey North: Common Loon." Learner.org. <http://www.learner.org/jnorth/search/Loon.html> (accessed on May 13, 2004).

Loon Preservation Committee. <http://www.loon.org> (accessed on July 14, 2004).

Loon Watch. <http://www.northland.edu/soei/loonwatch.asp> (accessed on July 14, 2004).

"Loons." Alaska Department of Fish and Game. <http://www.adfg.state.ak.us/pubs/notebook/bird/loons.php> (accessed on May 13, 2004).

Wildlife Conservation Society. <http://wcs.org> (accessed on July 14, 2004).

GREBES

Podicipediformes

Class: Aves

Order: Podicipediformes

One family: Podicipedidae

Number of species: 22 species

monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

Grebes stand anywhere from 8.7 to 29.9 inches (22 to 76 centimeters) tall and weigh between 3.5 and 56 ounces (100 to 1,600 grams). The appearance and color in both sexes of these diving birds are similar, though the female is usually smaller. Their coloration varies, depending on whether or not they are breeding. Their wings are rather short and skinny. Their eyes may be yellow, red, or brown, and their bills are short. Because their feet have adapted, changed over time, to swimming, they are unable to walk well on land and can do so only for short distances.

Although their weight remains basically the same throughout their lives, their body mass distribution changes on a yearly cycle. When flight is needed, breast muscle is built up. When frequent diving is required, leg muscle is developed. And when flight feathers are shed each year, huge quantities of fat are deposited because grebes eat feathers. Eating these feathers gives their stomachs a protective lining against the many parasites that inhabit the grebes' bodies. As many as thirty thousand parasites have been counted on one grebe.

GEOGRAPHIC RANGE

Grebes live throughout the world but not in the Antarctic or high Arctic regions where temperatures are frigid.

HABITAT

Grebes live in freshwater ponds and lakes as well as slow-moving rivers. Northern populations migrate, travel from

region to region seasonally, to inland lakes and coastal waters during winter months.

DIET

In addition to feathers, grebes eat many kinds of fish, including perch, herring, eels, minnow, pipefish, goby, and cod. They also eat water bugs, crayfish, shrimp, and snails.

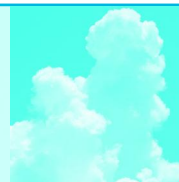
Grebes are powerful divers and can feed just below the surface or in greater depths.

BEHAVIOR AND REPRODUCTION

Grebes like to sunbathe and preen, groom, themselves and spend a lot of time doing so. Many grebes have ten to twelve calls that they use, primarily during breeding season, while other grebes are almost completely silent year-round. Their vocalizations range from whistles to beeps to wails.

Grebes fly at night when moving between various regions. They sometimes fly in groups and loose flocks. The grebe is seasonally monogamous (muh-NAH-guh-mus), has only one mate each year. Nests are built by both parents on the water so that they float, but often they are attached to plant life. These birds build several other platforms besides the nest which they use for resting, mating, and sunbathing. Two to four eggs, or three to eight eggs at higher latitudes, are laid and incubated, warmed, by both parents for twenty-two to twenty-three days. After birth, both parents care for and feed the chicks, which take their first flights between six and twelve weeks of age. They are ready to breed at one year. Some species lay eggs two or three times each year.

Predators of the grebe, animals that hunt them for food, include weasels, mink, ferrets, crows, hawks, gulls, and pike. Grebes live to be anywhere from eleven to fifteen years old.



OIL SPILLS: WHAT'S THE BIG DEAL?

When oil tankers spill oil into the ocean, rivers, and bays, aquatic wildlife and the environment are harmed. Spilled oil floats on the surface of the water and spreads out into an "oil slick." Animals that pass through the slick can be seriously injured. Feathers lose the ability to repel water, and fur is no longer able to keep mammals warm. Also, animals swallow the poisonous oil as they attempt to clean themselves, and die.

The largest spill in the United States happened in 1989 when the *Exxon Valdez* spilled eleven million gallons of oil off the coast of Alaska. Two-hundred-sixteen thousand gallons (818,000 liters) of oil ended up on shore, affecting approximately 1,300 miles (2,090 kilometers) of shoreline.

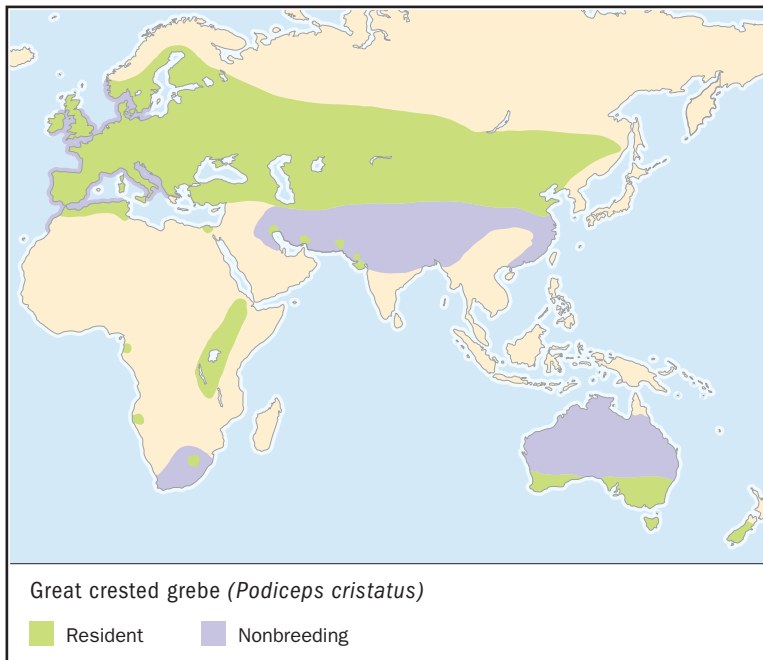
The Exxon Valdez Oil Spill Trustee Council estimates that the spill killed 250,000 seabirds, 2,800 otters, 300 harbor seals, 250 bald eagles, up to 22 killer whales, and billions of salmon and herring eggs.

GREBES AND PEOPLE

Though once hunted for their plumage, feathers, and as food, grebes are considered bad-tasting in most parts of the world today. In China, the little grebe's meat is used for medicine.

CONSERVATION STATUS

Although no species of grebe is immediately threatened, two species, the giant pied-billed grebe and Colombian grebe, became Extinct, died out, in the 1970s. The Alaotra grebe is listed as Vulnerable, facing a high risk of extinction in the wild. The numbers of the Madagascar grebe have declined recently to the point of concern, due primarily to habitat destruction and the introduction of exotic fish.



GREAT CRESTED GREBE

Podiceps cristatus

SPECIES ACCOUNTS

Physical characteristics: Great crested grebes are 18 to 24 inches (46 to 61 centimeters) tall and weigh between 1.25 and 3.3 pounds (0.57 to 1.5 kilograms). During breeding, the adult's crown is black while the sides of the head are white blending to a light brown fan at the back of the head. Their undersides are white. Nonbreeding adults have no fan. Immature birds are similar, but sport numerous black stripes on the side of the head. Their eyes are red and the bill is pink.

Geographic range: These birds live in Europe, in Asia south to the Himalayas, and in North Africa north of the Sahara Desert. They spend the winters in warmer coastal waters.

Habitat: Great crested grebes breed on large lakes and in brackish, slightly salty, waters. They can also be found in environments such as city parks.

Great crested grebes flee from danger by diving under water rather than taking flight.
(Illustration by Barbara Duperron.
Reproduced by permission.)



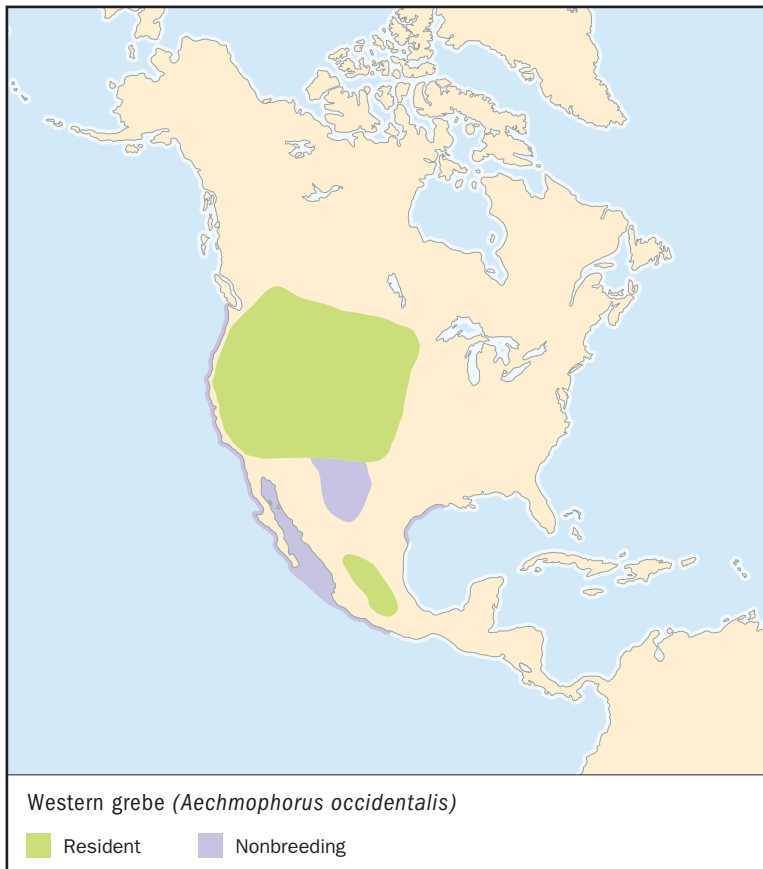
Diet: Great crested grebes eat mostly large fish, but also eat squid, frogs, snails, and other invertebrates, animals without backbones.

Behavior and reproduction: Great crested grebes can be found in groups of up to ten thousand, although they are also found alone or in pairs. This species participates in elaborate mating rituals. Nests are built on the water, and although females can lay up to nine eggs, they are more likely to lay between three and five eggs. Incubation lasts twenty-five to twenty-nine days. Parents carry their young on their backs for three to four weeks. Chicks are able to fly at ten weeks.

Great crested grebes flee from danger by diving under water rather than taking flight. They can live to the age of eleven years.

Great crested grebes and people: This bird was once extensively hunted for its feathers and as a result nearly became extinct in Europe in the 1800s.

Conservation status: Although once nearly extinct in Europe, this species has made an impressive comeback thanks to the eutrophication (yoo-troh-fih-KAY-shun), the aging process, of lakes—the lakes contain more food for the grebes as they age. Populations are stable in all ranges. ■



WESTERN GREBE

Aechmophorus occidentalis

Physical characteristics: Western grebes stand 21.6 to 29.5 inches (55 to 75 centimeters) tall and weigh 1.8 to 4 pounds (0.8 to 1.8 kilograms). Females are smaller than males. The body is narrow, the neck and bill long. Breeding adults are black from the top of the head to below the eye. The rest of the top part of the body is blackish with sides being spotted with gray. Undersides are white. Nonbreeding adults are similar but with less contrast between the black/gray and white areas. Eyes are red and the bill is green.

Geographic range: Western grebes are found in central Mexico and western North America. They winter on the coast of Texas and the Pacific coast south to Baja California.

A pair of western grebes
“dancing” on the water as part
of their courtship (period before
mating). (© Phil Dotson/Photo
Researchers, Inc. Reproduced by
permission.)



Habitat: Western grebes breed on lakes and marshes with large areas of open waters, both fresh and brackish. They like the reedy shores for building their nests. These birds winter on salt lakes or in coastal waters.

Diet: Western grebes eat almost nothing but fish. They often spike fish with their pointed bills. Western grebes can dive for periods of up to forty seconds.

Behavior and reproduction: Western grebes form colonies, sometimes up to several thousand birds. They have well-developed courtship displays, including the ability to “dance” on water in pairs. Females lay eggs just once each year, and the timing depends more on the availability of food than on the seasons. Females usually lay two to six eggs in nests that are 3 to 12 feet (2 to 4 meters) apart and built out of wetland vegetation. The nests are found in the protective environment of the reedy waters.

Incubation lasts from twenty-two to twenty-four days, and both parents raise the chicks and carry them on their backs. Chicks are independent at eight weeks.

Western grebes and people: These birds often fall victim to oil spills while wintering in the coastal waters. They also have had reduced breeding success in areas where insecticides used for agriculture wash into their wintering habitats.

Conservation status: Western grebes are not threatened. ■

FOR MORE INFORMATION

Books:

Konter, Andre. *Grebes of Our World*. Barcelona: Lynx Edicions, 2001.

Ogilvie, Malcolm, and Chris Rose. *Grebes of the World*. New York: Bruce Coleman, 2002.

Simmons, K. E. *The Great Crested Grebe*. Buckinghamshire, U.K.: Shire Publications, 1999.

Periodicals:

Seago, Michael J. "Great Crested Grebe." *Birds of Britain* (May 2004). Online at <http://www.birdsofbritain.co.uk/bird-guide/g-c-grebe.htm> (accessed on July 13, 2004).

Web sites:

American Birding Association. <http://www.americanbirding.org> (accessed on July 13, 2004).

"Great crested grebe." Royal Society for the Protection of Birds. <http://www.rspb.org.uk/birds/guide/g/greatcrestedgrebe/index.asp> (accessed May 27, 2004).

"Order Podicipediformes." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Podicipediformes.html> (accessed May 27, 2004).

"What's the Story on Oil Spills?" National Oceanic and Atmospheric Administration, Office of Response and Restoration. <http://response.restoration.noaa.gov/kids/spills.html> (accessed on May 27, 2004).

PELICANS AND OTHER FISHING BIRDS

Pelecaniformes

Class: Aves

Order: Pelecaniformes

Number of families: 5 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

The birds in the Pelecaniformes group are mostly seabirds, and they are some of the most easily recognized birds in the world. All of the birds in the five families have webbing that connects all four toes, although the frigatebirds (FRIGG-it-birdz) have very small webs. The largest birds in the group are the pelicans. The biggest pelicans weigh as much as 33 pounds (15 kilograms). The smallest birds are tropicbirds. Some of them weigh only 10.5 ounces (300 grams).

Many of the birds in this group have interesting bills. Everyone knows the pelicans with their enormous pouches. The Australian pelican has the largest bill of any bird—it is 20 inches (50 centimeters) long. Most of the other birds in the Pelecaniformes group have bills with serrated edges like the blade of a bread knife. These edges help the birds hold slimy fish. Almost all of the bills have a hook on the end. The hooks help tear apart the birds' prey. The anhingas (an-HING-guz) are the only exception. They have sharp, pointy bills that are less than 4 inches (10 centimeters) long.

All of these birds, except for the tropicbirds, have a bare skin pouch or throat sac. The pouches can be fluttered to help cool the birds. The pelicans' fish-catching pouches are the biggest ones. But when male frigatebirds are courting, they can blow up their pouches to look like big red balloons. The birds in this group also have air sacs under the skin that help cushion them when they plunge into the water.

The feathers of the birds in the Pelecaniformes order are not very colorful. Most of them are black, brown, or white. The birds in the cormorant family are unusual because their feathers are not waterproof and can get soaking wet. After swimming, the birds have to spread their wings to dry them in the sun. Although the birds in this group lack bright feathers, other parts of their bodies are surprisingly colorful. The eyes of some pelicans and cormorants are bright green or blue. Many of the birds have yellow, orange, blue, and red throat patches, feet, and bills. Some of the bare parts of the birds turn colorful just during breeding season.

GEOGRAPHIC RANGE

Since most of the birds in the Pelecaniformes order are seabirds, they can be found in oceans, at seashores, and on ocean islands all around the world. A few of the birds live inland near big lakes and rivers. Because they eat only water animals, none of them can live in dry areas. Most of the birds in this group prefer warm waters and avoid the coldest areas. But a few can be found in waters north of the Arctic Circle and in the oceans surrounding Antarctica.

HABITAT

Pelecaniformes depend on fish and other water animals for their food, therefore the habitats they prefer are oceans, seacoasts, rivers, and lakes. Gannets, boobies, tropicbirds, and frigatebirds fish in saltwater, while anhingas are more likely to find their food in freshwater. Some pelicans and cormorants are at home in saltwater, freshwater, and in tidal areas where the two kinds of water mix.

DIET

Water animals are the only prey these birds catch, and most of them eat only fish. A few of the birds also eat squid, shrimp and other crustaceans, jellyfish, carrion (mostly dead fish discarded by fishing boats), eggs and chicks of other seabirds, young turtles, and tadpoles.

Although all of the Pelecaniformes birds eat mostly fish, they have several different methods for catching them. Tropicbirds snatch flying fish from the air. Cormorants chase fish at high speeds underwater, propelled by their feet, until they can catch the birds in their beaks. Anhingas chase fish and use their bills as underwater spears to catch them. Gannets plunge into the water from as high as 100 feet (30 meters) to stun and kill their

prey. Some pelicans work as teams to drive fish into shallow water where they can easily catch them. And frigatebirds steal fish from other birds.

BEHAVIOR AND REPRODUCTION

Most of these birds feed during the day and spend the night in colonies of several different kinds of birds. Except for the gannets, the birds do not migrate long distances. Pelicans and cormorants move around when food gets scarce, but most of the birds stay in the same area year round. Even though many of them depend on the oceans for food, they usually stay near land.

At breeding time, the males and females show their interest in each other with a variety of courtship displays. Tropicbird pairs swoop and glide together in midair. Pelicans bow to each other and sway in unison. Male frigatebirds blow up their pouches to attract females, and boobies dance with their colorful feet.

When the birds have formed pairs, they crowd together at nesting places. They are more likely to nest in trees and bushes than most seabirds. But pelicans and boobies lay their eggs on the ground, and some tropicbirds nest on cliffs. The nesting areas are crowded because the birds all want to be as close as possible to the feeding areas. When fishing is good, they may only spend thirty minutes a day feeding. However they may spend more time flying from their nests to the fishing spots and back to their nests again.

Since Pelecaniformes usually nest so close together, each bird is constantly warning the birds nearby not to come too close. They wave their wings, poke their beaks at each other and make a lot of noise. Most of the birds can only croak or grunt, but tropicbirds have a shrill scream. The birds usually have plenty of time for arguing, because they spend such a short time feeding every day.

The females lay between one and six eggs. The parents take turns sitting on the eggs until they hatch in twenty-three to fifty-seven days. When the chicks hatch, they are naked and helpless. The parents regurgitate, spit up, food into their own mouths, and the chicks eat from their open bills. The young birds may take as long as four months before they learn to fly.

PELECANIFORMES AND PEOPLE

Pelicans and other birds in this group are the subjects of many legends and stories for children. Many of these birds seem

to enjoy the company of humans and follow their fishing ships and even rest on them. Farmers gather the droppings from seabird nesting sites to make fertilizers for crops. In the Far East, cormorants are trained to catch fish for their owners, and some peoples on South Pacific islands still use the long tail feathers of tropicbirds for decorating their clothing.

CONSERVATION STATUS

About one-third of the Pelecaniformes birds are under some kind of threat. Four species are listed as Endangered, facing a very high risk of extinction, or Critically Endangered, facing an extremely high risk of extinction. The problems the birds face include polluted water and loss of habitat for nesting. People have over-fished some parts of the ocean, leaving too few fish for the birds. Some people kill the birds that eat the fish they want for themselves. Some birds have naturally small populations, such as those that live on a few small islands and nowhere else. These birds can be wiped out by animals that are brought to the islands. For example, rabbits brought to some islands eat the plants that the birds need to shade their nests. That means fewer birds are able to raise young.

But there is good news, too. Birds in this group are being helped by people all over the world. In North America, the brown pelican was listed as endangered because of poisonous chemicals, such as dichlorodiphenyltrichloroethane (DDT) that got into their water. When people realized they were harming the birds, the poisons were outlawed. Now the pelicans have made a good comeback and are no longer listed as endangered in some parts of the United States.

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.



WHAT MAKES A GOOD SEABIRD?

Seabirds have many special body parts that help them live on the ocean. Their webbed feet are perfect for swimming. They have air sacs under their skin that make for a soft landing when they plunge into the water. Their long wings help them soar above the waves, and their eyes are good for seeing prey underwater. They have glands that get rid of extra salt, and other glands that supply them with oil to make their feathers waterproof. Seabirds have one more important feature, bills that are designed for grabbing slippery fish.

Haley, Delphine, ed. *Seabirds of Eastern North Pacific and Arctic Waters*. Seattle: Pacific Search Press, 1984.

Johnsgard, Paul A. *Cormorants, Darters, and Pelicans of the World*. Washington, DC and London: Smithsonian Institution, 1993.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Nelson, J. Bryant. *The Sulidae: Gannets and Boobies*. Oxford, London, Glasgow: Oxford University Press, 1978.

Soper, Tony. *Oceans of Seabirds*. London: David and Charles Publishers, 1989.

Stuart, Chris and Tilde. *Birds of Africa from Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

de Roy, Tui. "To Swim with Pelicans." *International Wildlife* (January–February 1995): 4–11.

McGrath, Susan. "Shoot-Out at Little Galloo: Angry Fishermen Accuse the Cormorant of Ruining Their Livelihood." *Smithsonian* (February 2003): 72–78.

Miller, Claire. "Super Scoopers." (pelicans) *Ranger Rick* (July 1999): 6–12.

Milner, Richard. "Spray It Again." (pelican behavior) *Natural History* (July 2001): 80–82.

Morgan, S. M., M. A. Ashley-Ross, and D. J. Anderson. "Incubation in Masked Boobies." *American Zoologist* (December 2000): 1139.

Weimerkirch, Henri, Olivier Chastel, Christophe Barbraud, and Olivier Tostain. "Frigatebirds Ride High on Thermals." *Nature* (January 23, 2003): 333–334.

Web sites:

The Ocean Conservancy. <http://www.oceanconservancy.org> (accessed on July 14, 2004).

family CHAPTER

TROPICBIRDS

Phaethontidae

Class: Aves

Order: Pelecaniformes

Family: Phaethontidae

Number of species: 3 species

PHYSICAL CHARACTERISTICS

Tropicbirds are medium-sized seabirds. The males and females look similar, with long tail streamers, webbed feet, a yellow or red bill that curves downward, and long, pointed wings. They are between 29 and 40 inches (74 and 100 centimeters) in length, with their long tails accounting for about half of that length. The wingspan of the tropicbirds is 37 to 44 inches (94 to 112 centimeters), and they weigh between 10.6 to 26.5 ounces (300 to 750 grams). Their feathers are mostly white, sometimes with a little pink, and they have black wing markings and black marks at the eyes. Red-billed tropicbirds and the young of all three species have speckled feathers on their backs.

GEOGRAPHIC RANGE

Tropicbirds live in warm, tropical waters and breed on islands all across the oceans.

HABITAT

Tropicbirds build their nests on tropical islands. When they are not nesting, they fly over the ocean and rest on the water.

DIET

Flying fish are the main food of tropicbirds. They also feed on other kinds of fish and squid. They can catch flying fish in the air or fly into the water and catch prey near the surface. They usually search for food alone or in pairs, but they may also join large flocks of other seabirds.

phylum

class

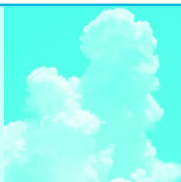
subclass

order

monotypic order

suborder

▲ family



HURRICANE BIRDS

Although tropicbirds live year round in the tropics, they occasionally show up in surprising places. If they get caught in a tropical storm or hurricane, they may end up far to the north or south of their usual areas. For example, after a hurricane, they might be found as far north as Massachusetts. Often the birds have been injured by the storm, and they need to be cared for by a veterinarian or wildlife officer before they can be sent south and set free.

BEHAVIOR AND REPRODUCTION

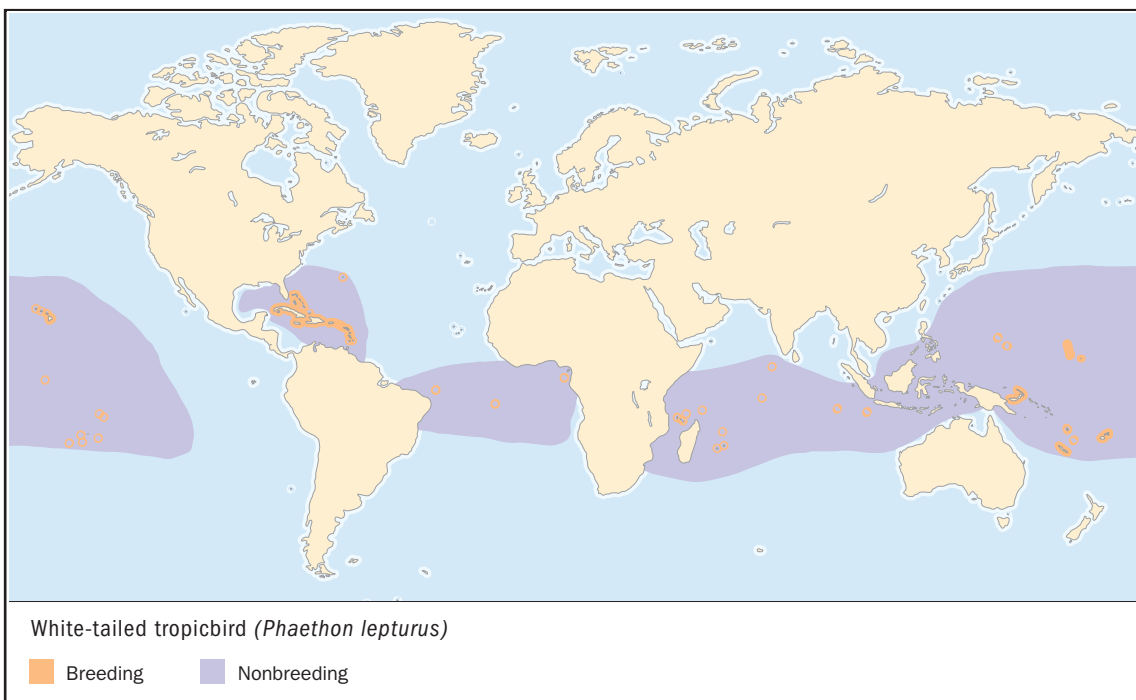
Tropicbirds spend more time at sea than other birds in their group, which includes frigatebirds (FRIGG-it-birdz), gannets, boobies, cormorants, and pelicans. They tend to stay far away from their breeding islands, flying above the water or sitting on it, unless they are courting or nesting. They usually nest on ledges of cliffs on islands. Sometimes they crawl into holes in rocky cliffs. They may also nest in trees or on the ground under bushes that protect them from sun and rain. Ground nests are usually part of a colony, a group of seabirds nesting close together. They lay only one egg. Both parents feed and care for the chick until it is ready to fly in eleven to fifteen weeks.

TROPICBIRDS AND PEOPLE

In the early 1900s many tropicbirds were killed and their feathers were sold for making hats. The long tail feathers are still used by native island peoples to decorate traditional clothing and headdresses. Some people eat tropicbirds, including their eggs and young. Tropicbirds attract ecotourists, people who travel to see wildlife and learn about the environment, and the money spent on boat tours, hotels, and food helps the local people who live near the birds.

CONSERVATION STATUS

On some islands, tropicbirds have lost their nesting habitat. Other birds get caught in big fishing nets at sea. Tropicbirds are sometimes harmed by oil spills because they spend so much time on the ocean. However tropicbirds are plentiful enough that they are not in danger of extinction, dying out.



WHITE-TAILED TROPICBIRD

Phaethon lepturus

SPECIES ACCOUNT

Physical characteristics: The white-tailed tropicbird is the smallest of the three kinds of tropicbirds. Male and female birds look alike. The adult is 29 inches (74 centimeters) long from bill to end of tail, and about half that length is the tail. Its wingspan is 37 inches (94 centimeters), and the bird weighs 11 ounces (312 grams). The tropicbird's feathers are mostly white, but it has black markings on the upper wings, and a black eye-stripe. It has a long white tail with a black stripe on top and a down-curved bill that is orange or red-orange. It has short legs and its feet are webbed. Since the tropicbird's legs are set far back on its body, it is a good swimmer, but it is awkward on land. Tropicbirds do not have bare skin pouches on their throats the way pelicans and other birds in their group do.

Geographic range: White-tailed tropicbirds nest on tropical ocean islands, including the Hawaiian Islands. When they are not nesting,



Except when they're nesting on tropical islands, white-tailed tropicbirds spend their lives flying over the ocean or sitting on the water. (Illustration by Patricia Ferrer. Reproduced by permission.)

they are rarely seen near land. Instead, they spend the rest of their lives flying over the ocean or sitting on the water.

Habitat: The islands these birds nest on are all in warm tropical areas. The habitats they prefer are rocky cliffs where land predators are not able to reach them. They go on long trips over the ocean, as far as 75 miles (120 kilometers) from the islands while searching for fish. When they are not nesting, they stay far from the islands and continental shorelines. They are usually found in water with warm temperatures between 74.8 and 76°F (23.8 and 24.9°C).

Diet: The main foods of white-tailed tropicbirds are flying fish and squid. They also eat other kinds of fish. Tropicbirds can catch and eat rather large fish for their size, up to 18 percent of their body weight. That would be like a 100-pound, or 36-kilogram, person eating the meat in 72 hamburgers. The birds usually plunge into the water from the air, but they are not deep divers. They find their food near the surface of the water. They can also catch flying fish in the air.

Behavior and reproduction: White-tailed tropicbirds are excellent fliers and can stay in the air for a long time. When they are flying, they have a rattling call. They are built for life on the ocean, and are clumsy on land. Their legs are set far back so they shuffle along on their breasts and push themselves with their wings. They cannot stand upright and fall forward on their bellies. Sometimes they stab their bills into the ground and drag themselves forward.

Before breeding begins, many pairs of white-tailed tropicbird hover over the water near the nest site. They call, “kyep-kyep,” and flap their wings in unison. They may fly higher than 300 feet (94.4 meters). The top bird in a pair sometimes hangs its long tail down onto its mate below. When one bird in a pair flies to a nest site, the other one follows.

White-tailed tropicbirds choose nest sites that are out of the direct sun. They like crevices in rocks or ledges under overhanging rocks. They also nest on sandy spots under bushes. The nest is just a shallow scrape in the ground. The birds that are able to use holes in rocky cliffs for their nests are quite safe from predators. The birds nesting on the ground try to defend their nests from rats and other predators with harsh screams and sharp pecks.

The female bird lays one egg, and the parents take turns keeping it warm. When white-tailed tropicbirds hatch, their bills are a bluish color. The parents regurgitate, spit up, food into their own mouths, and the chicks eat from their open bills. Young birds grow speckled feathers on their backs, and their bills turn yellow. They leave the nest before they are three months old, and they do not practice flying before they leave.

White-tailed tropicbirds and people: Bird watchers sometimes travel thousands of miles to see white-tailed tropicbirds. They also have a loud, shrill scream that reminded sailors of the whistle blown by a ship's officer. The officer was called a bosun or boatswain. That is how the bird got the nickname bosun bird.

Before 1880 on the island of Bermuda, white tropicbirds were hunted to supply hat-makers with feathers. When the birds became scarce, the birds became a protected species. The tropicbird is considered a national bird of Bermuda and its picture appears on postage stamps and on the 25-cent coin.

Conservation status: On many islands, white-tailed tropicbirds have lost nesting habitat because of development on their former nest sites. But they are still the most common of the three kinds of tropicbirds, and they are not in danger of extinction. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Smithsonian Birds of North America*. London and New York: DK Publishing, Inc. 2001.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Fleet, Robert R. *Red-Tailed Tropicbird on Kure Atoll (No. 16)*. Washington, DC: American Ornithologists Union, 1974.

Haley, Delphine, ed. *Seabirds of Eastern North Pacific and Arctic Waters*. Seattle: Pacific Search Press, 1984.

Harrison, Peter. *Seabirds, An Identification Guide*. Boston: Houghton Mifflin Company, 1983.

Hosking, Eric. *Seabirds of the World*. New York: Facts on File, 1983.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Soper, Tony. *Oceans of Seabirds*. London: David and Charles Publishers, 1989.

Periodicals:

Friend, Tim. "Courtship is Quite a Display." *USA Today* (January 14, 2004): D06.

Harrison., Craig S. "Tropicbird Song." *Sea Frontiers* (January–February 1994): 44–52.

Lee, D.S. and M. Walsh-McGehee. "The Birds of North America, White-Tailed Tropicbird, No. 353." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (1998): 1–24.

Veit, Allison C., and Ian L. Jones. "Function of Tail Streamers of Red-Tailed Tropicbirds (*Phaethon rubricauda*) as Inferred from Patterns of Variation." *The Auk* (October 2003): 1033–1044.

Web sites:

"Amokura, the Red-Tailed Tropicbird." New Zealand Bird Gallery. <http://www.nzbirds.com/Amokura.html> (accessed on April 25, 2004).

"Red-Tailed Tropicbird." Midway Atoll National Wildlife Refuge. <http://midway.fws.gov/wildlife/rtrr.html> (accessed on April 7, 2004).

Roberson, C. D. "Tropicbird Identification." MontereyBay.com. <http://www.montereybay.com/creagrus/tropicbd-id.html> (accessed on April 25, 2004).

"Tropicbird" Wikipedia, The Free Encyclopedia. <http://en.wikipedia.org/wiki/Phaethontidae> (accessed on April 25, 2004).

"White-tailed Tropicbird." Midway Atoll National Wildlife Refuge. <http://midway.fws.gov/wildlife/wtrr.html> (accessed April 7, 2004)

family CHAPTER

FRIGATEBIRDS

Fregatidae

Class: Aves

Order: Pelecaniformes

Family: Fregatidae

Number of species: 5 species

PHYSICAL CHARACTERISTICS

Frigatebirds (FRIGG-it-birdz) are unusual seabirds. Their feathers are not waterproof, so they try to avoid getting them wet. They have mostly dark feathers, although many frigatebirds, especially the females and young ones, have white feathers on their breasts, and some young birds have white heads. The birds also have short legs, webbed feet, forked tails, and the males have an inflatable pouch on their throats.

Frigatebirds have extremely long, pointed wings. In fact, they have the largest wings in proportion to their weight of any other bird. They also have exceptionally strong breast muscles that work together with their wings to make them powerful, acrobatic fliers.

Female frigatebirds are somewhat larger than the males. The birds are between 30 and 44 inches (75 and 112 centimeters) long from their bills to the end of their tails, and their wingspan is between 69 and 91 inches (176 and 230 centimeters). They weigh up to 3.3 pounds (1.5 kilograms), and almost half of their body weight consists of breast muscles and feathers.

GEOGRAPHIC RANGE

Magnificent frigatebirds fly above the warm ocean water and breed on tropical and subtropical islands all around the world. The other four species of frigatebirds are more rare, and each species breeds on only a few remote islands.

phylum

class

subclass

order

monotypic order

suborder

▲ family



SKY PIRATES

Frigatebirds usually catch their own meals, but they are famous for the way they steal food from other birds. In fact, they were named after the fast frigate ships used by pirates who robbed other ships at sea. When a frigatebird notices that another seabird has caught a fish, it often dives at the seabird like a fighter jet and jabs it until it drops the fish. If the seabird has already swallowed its meal, the frigatebird may grab it by the neck, tail, or wing and dangle it until it coughs up its load. Instantly, the frigatebird swoops down and snatches its free lunch.

HABITAT

Frigatebirds breed in colonies with other frigatebirds on tropical islands. The warm water near their islands is about 77°F (25°C). They choose islands that are near water with plenty of flying fish, fish that jump and glide in the air before falling back into the water.

DIET

Flying fish are the main diet of frigatebirds. They also snatch fish and other animals at the sea's surface. They attack other seabirds in the air and steal their prey. Frigatebirds sometimes eat the eggs and young of other seabirds, as well as fish scraps thrown overboard by fishing boats.

BEHAVIOR AND REPRODUCTION

During the day, frigatebirds spend most of their time in the air. They usually search for food around their home islands, but they sometimes fly far out over the ocean when they are not breeding. They may breed at any time of year. Male birds sit at a nest site and blow up their throat pouches to attract females. They prefer to build their nests in low shrubs or trees, but sometimes they put them on the bare ground. They lay just one egg, and the young bird learns to fly between the age of five and seven months. After that, it is still dependent on its parents for food for another two to six months.

FRIGATEBIRDS AND PEOPLE

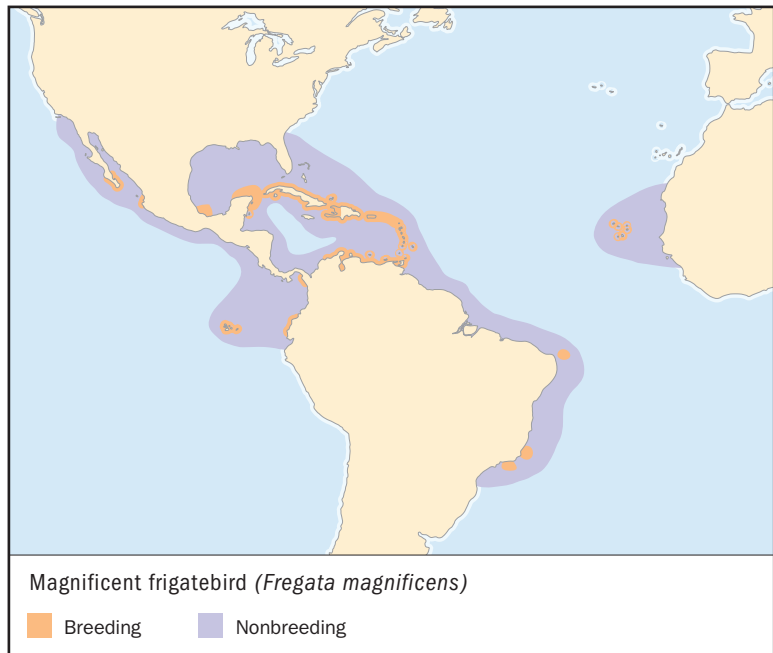
People have used to use frigatebirds to carry messages between islands in the South Pacific. Now the birds are mainly a tourist attraction.

CONSERVATION STATUS

The Ascension frigatebird is listed as Critically Endangered, facing an extremely high risk of extinction, and the Christmas frigatebird is considered Vulnerable, facing a high risk of extinction. Both lost much of their habitat when people devel-

oped the islands where they breed, and they do not like to be disturbed by people who come to watch and photograph them close-up. But their biggest trouble is the variety of mammals brought to the islands by people. Rats, pigs, goats, and pet cats eat the frigatebirds' eggs and chicks, and they destroy the plants the birds need in breeding areas.

SPECIES ACCOUNT



MAGNIFICENT FRIGATEBIRD *Fregata magnificens*

Physical characteristics: Magnificent frigatebirds are the largest of the frigatebirds, with a length of 41 to 44 inches (104 to 112 centimeters) from bill to tail, and they weigh between 3.1 and 3.3 pounds (1.4 and 1.5 kilograms). Their straight gray bills are hooked at the end. They have such short legs that they cannot walk on land or swim on the water, but their strong claws help them cling to the branches where they roost and build their nests. The adult female has a white breast and some brown feathers on the top of her wings. The adult male has a mostly black body with a red throat sac.

No other birds in the world have wings as large in proportion to their weight as magnificent frigatebirds. Their wingspan is 85 to 91 inches (216 to 231 centimeters). The birds' strong breast muscles work together with their wings, making them able to fly fast and soar high, and their forked tails help them steer.

Geographic range: Magnificent frigatebirds breed on tropical and subtropical islands in the Atlantic and Pacific Oceans near North and



Magnificent frigatebirds prefer to live on tropical islands with trees and bushes for nesting surrounded by an ocean full of flying fish. (Illustration by Patricia Ferrer. Reproduced by permission.)

South America. Some also breed in mangrove trees along the coasts. Colonies of the birds are also found off the western coast of Africa. They usually roam the waters near their home islands, but they sometimes fly far out over the ocean.

Habitat: The ideal habitat for a colony of magnificent frigatebirds is a tropical island with mangroves or other trees and bushes for nesting surrounded by an ocean full of flying fish.

Diet: Magnificent frigatebirds feed on flying fish that they catch in the air up to 6 or more feet (1.8 or more meters) above the surface of the ocean. They also eat other small fish, as well as squid, young turtles, crabs, and jellyfish. Frigatebirds snatch this prey from the surface of the water. They like the eggs and chicks of other seabirds when

they can get them, and they eat the fish parts discarded by fishing boats. Sometimes they steal the prey of other seabirds in midair.

Behavior and reproduction: Magnificent frigatebirds never land on water, except accidentally. Their feathers are not waterproof and quickly become wet and heavy in the water, making it difficult for them to take off. Instead, they spend their daytime hours in the air, and they perch in bushes or on tree branches when they roost each night. They are exceptionally skillful at catching fish and other sea animals while flying right above the surface of the water. Strong winds do not bother them—they can even ride out a hurricane in flight.

At breeding time, the males gather in trees or bushes about pecking distance from each other. It takes the males about twenty-five minutes to blow up their red “balloons.” They do it by sucking air into the wrinkled red pouches on their throats. Then they shake their wings and rattle their bills. The females fly overhead and check them out. Then, each one chooses a male as her mate. The pairs build their flat nests of twigs, sticks, and grasses right on the spots where the males were showing off. The males often steal nest material from each other or from other seabirds nesting nearby. The birds are noisy at the nest site, although they are quiet at sea.

Each female lays just one egg, and she will take care of this young bird for more than a year. For about two months, the parents take turns sitting on the egg. The young bird is naked and helpless when it hatches. But soon the chick starts begging loudly to be fed, and it eats food that the parents regurgitate (re-GER-jih-tate; spit up). Before the chick is three months old, its father leaves. After that, the female continues to feed the young bird long after it learns to fly. Young frigatebirds practice catching food on the wing by dropping feathers and seaweed. It takes them a long time to learn how to feed themselves. Females breed every other year, and young birds are ready to breed by the age of seven.

Magnificent frigatebirds and people: These birds have become a favorite of bird-watching tourists, and the money the tourists spend on boat tours, hotels, and food helps the local people who live near the birds.

Conservation status: Magnificent frigatebirds have suffered from loss of habitat at many of their breeding places. Fishing boats have overfished some of the ocean areas where the birds used to find their food. However, the birds are not in danger of extinction (dying out). ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Smithsonian Birds of North America*. London and New York: D.K. Publishing, 2001.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Harrison, Peter. *Seabirds, An Identification Guide*. Boston: Houghton Mifflin, 1983.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin, 1996.

Soper, Tony. *Oceans of Seabirds*. London: David and Charles Publishers, 1989.

Periodicals:

Diamond, Antony W., and Elizabeth A. Schreiber. "The Birds of North America, Magnificent Frigatebird, No. 601." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (2002): 1–24.

Fountain, Henry. "Tracking High Fliers." *The New York Times* (January 28, 2003): D3.

Pitz, Mary Elisabeth. "Pirates in Paradise." *Birder's World* (April 2001): 56.

Weimerkirch, Henri, Olivier Chastel, Christophe Barbraud, and Olivier Tostain. "Frigatebirds Ride High on Thermals." *Nature* (January 23, 2003): 333–334.

Web sites:

"Frigatebirds." Rochester Institute of Technology, Galápagos Pages. <http://www.rit.edu/rhrsbi/GalapagosPages/Frigatebirds.html> (accessed on April 8, 2004).

"Magnificent Frigatebird, *Fregata magnificens*." eNature.com. <http://www.enature.org/main/home.asp> (accessed on April 9, 2004).

"Frigatebirds (Man-of-War)." GBR Explorer, Great Barrier Reef Marine Park Authority. [http://www.reefed.edu.au/explorer/animals/marine_ vertebrates/seabirds/frigatebirds.html](http://www.reefed.edu.au/explorer/animals/marine Vertebrates/seabirds/frigatebirds.html) (accessed on April 9, 2004).

CORMORANTS AND ANHINGAS

Phalacrocoracidae

Class: Aves

Order: Pelecaniformes

Family: Phalacrocoracidae

Number of species: 40 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

PHYSICAL CHARACTERISTICS

The thirty-six species of cormorants are sleek, long-necked, dark waterbirds. They are good at flying and swimming, but they are clumsy when walking. Their length is between 19 and 40 inches (48 and 102 centimeters) from their bills to the end of their tails. Some weigh just 1.5 pounds (0.7 kilograms) and others weigh up to five times as much: 7.7 pounds (3.5 kilograms). Their long, thin, hooked bills have a saw-tooth edge. The Galápagos cormorant is unusual because it has stubby wings and cannot fly.

The four species of anhingas (pronounced an-HING-guz) are similar to the cormorants, but they have even longer necks. In some parts of the world, they are called darters. Their bills are sharply pointed (not hooked) and bright yellow. Their length from their bills to the end of the tails is between 34 and 36 inches (86 and 92 centimeters). They do not have oil glands for waterproofing their feathers.

GEOGRAPHIC RANGE

Cormorants are spread widely across the worlds' continents, except for desert areas and the very coldest regions. The birds that nest in the coldest regions migrate to warmer places in winter. Anhingas live in the warm, tropical and subtropical areas of North and South America, Africa, Asia, and Australia.

HABITAT

Cormorants and anhingas live in freshwater wetlands, swamps, lakes, rivers, and estuaries (wet areas near the ocean

where freshwater and saltwater mix). Anhingas that live near the ocean stay close to shore, cormorants fly out over the coastal waters.

DIET

Besides fish, these birds also eat other water animals such as frogs and crayfish. Cormorants snatch their prey with their bills, and anhingas usually spear their food. After swimming, the birds sit on perches and spread their wings in the sunshine.

BEHAVIOR AND REPRODUCTION

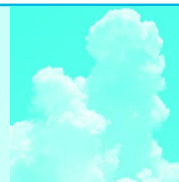
Usually cormorants and anhingas breed in colonies. They build rather messy nests on tree limbs or on cliff ledges. Both parents sit on the eggs and care for the young. When they are not breeding, they often flock together for feeding and for roosting at night.

CORMORANTS, ANHINGAS AND PEOPLE

Big flocks of cormorants are considered pests by some people because the birds can be messy and they eat fish. In South America, farmers gather the cormorants' droppings for fertilizer. In Japan and China, some people use cormorants to help them fish. Bird watchers sometimes travel long distances to see rare cormorants and anhingas.

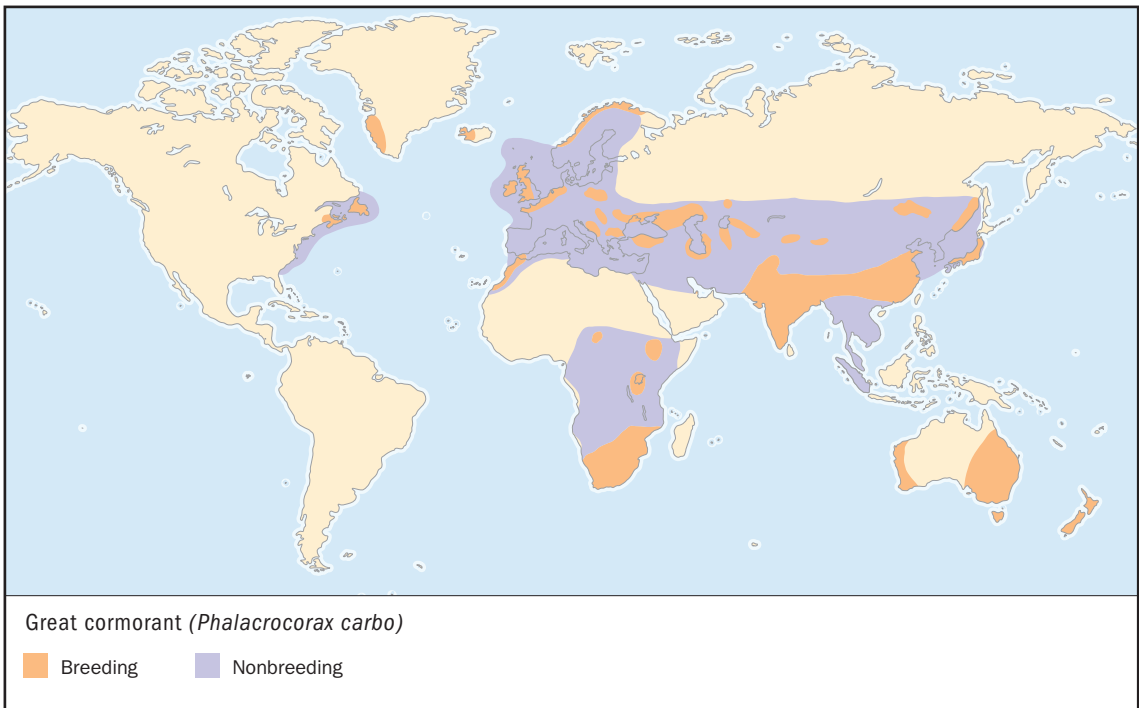
CONSERVATION STATUS

One species of anhinga and fourteen species of cormorants are at risk. The Pallas's cormorant has recently become Extinct (died out). Of the fourteen cormorant species, two are listed as Endangered.



FISHING WITH BIRDS

Some people in Asian countries use cormorants to help them catch fish. The birds are trained to behave like fishing machines. The fisher ties a piece of grass around a trained cormorant's neck to keep it from swallowing the fish it catches. After the bird jumps into the water and catches a fish, the fisher puts a pole in the water for the bird to grab with its feet. The fisher lifts the bird out and removes the fish. After a while, the fisher unties the grass from the bird's neck and lets it catch and eat all the fish it wants.



SPECIES ACCOUNTS

GREAT CORMORANT *Phalacrocorax carbo*

Physical characteristics: The great cormorant is the largest of all thirty-six species of cormorants. Its average length is about 37 inches (93 centimeters) and it weighs as much as 8 pounds (3.6 kilograms). Male and female birds look alike. Adult birds have glossy black feathers and a yellow throat pouch. In breeding season, the adults grow some white feathers on their necks and at the top of their legs.

Geographic range: Great cormorants are the most widely spread of all cormorant species. They are found on the east coast of North America, and in temperate areas in Africa, Asia, and Australia where the climate is moderate or cool. They usually spend the winter near their breeding places.



*The great cormorant is the largest of all cormorants, and the most widespread.
(Illustration by Emily Damstra.
Reproduced by permission.)*

Habitat: In North America, great cormorants nest mostly along the shore of the Atlantic Ocean and feed in coastal waters. But in other parts of the world, they are also an inland bird. They breed in many kinds of wetlands, including marshes and mangrove swamps, lakes, rivers, and reservoirs.

Diet: Great cormorants eat mostly small fish, but they occasionally catch other water creatures such as crayfish, squid, frogs, salamanders, snakes, and insects. They catch most of their prey underwater.

A cormorant usually swims along the surface and dips its head in and out of the water, looking for prey. If it spots something to eat, it dives in with its wings held firmly against its body. It pushes itself along with its webbed feet, and its heavy feathers help it sink down quickly. When the bird grabs a fish, it swims to the surface and swallows it headfirst. Later, it will regurgitate (spit up) the bones and scales. It leaves the water as soon as it has finished eating.

Behavior and reproduction: Cormorant feathers are not fully waterproof and become very heavy when wet. Colonies of cormorants can often be seen standing around with their wings spread as they dry their feathers.

Great cormorants nest in colonies on rocky cliffs along seacoasts or in trees near lakes and rivers. The male chooses the site and waves his wings. When a female approaches, the birds greet each other with courtship displays. The male brings nesting materials to the female, and she builds a big nest. She lays three or four eggs, and the adults both sit on them and care for the chicks. By the time the young birds are eight weeks old, they can fly as well as adults and take care of themselves.

Great cormorants and people: In most places, they are not of great importance to humans. In Asia, some great cormorants are trained to help people catch fish.

Conservation status: Great cormorants are widespread and plentiful. They are not in danger of extinction. ■



AMERICAN ANHINGA

Anhinga anhinga

Physical characteristics: With its long, snakelike neck, yellow pointed bill, and a tail that can be fanned out like a turkey's tail, the American anhinga is easy to recognize. Its average length is about 34 inches (85 centimeters) from bill to tail, and it weighs about 2.7 pounds (1.2 kilograms). The male is an overall black color with

silvery-white markings on the upper wings. The female has a brown head, neck, and upper chest.

Geographic range: American anhingas live in the southeastern part of the United States and in Mexico, Central America, and the northern two-thirds of South America.

Habitat: American anhingas usually live in warm wetlands, especially cypress swamps, and along the edges of wooded ponds, lakes, and slow-moving rivers. They need to have logs or tree branches nearby where they can sit in the sun to dry their feathers.

Diet: An anhinga usually catches fish, crayfish, and frogs by waiting for them to swim nearby underwater and spearing them with a lightning-fast jab of its sharp bill. Then, with the flick of its head, it tosses the prey into the air, catches it, and swallows it headfirst.

Behavior and reproduction: Unlike cormorants, anhingas soar high on outstretched wings. They often feed alone, but at night they roost with other birds in a colony. American anhingas sometimes nest in trees and bushes along with herons and cormorants. The male chooses a nest site and performs a variety of courtship displays, including wing waving and bowing. When a female joins him, she builds the nest with sticks brought by the male. She lays between one and five eggs, and both parents sit on the eggs and care for the young.

American anhingas and people: People are fond of watching this bird, especially the way it tosses fish into the air and catches them. Some call it the “water turkey” because of its tail. It is also called the “snakebird” because of the way it swims with just its neck and head above water. Bird-watching tourists spend money on boat tours, food, and hotels, which helps the local people who live near the birds.

Conservation status: American anhingas are not in danger of extinction. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Smithsonian Birds of North America*. London and New York: DK Publishing, 2001.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Harrison, Peter. *Seabirds, An Identification Guide*. Boston: Houghton Mifflin Company, 1983.

Johnsgard, Paul. *Cormorants, Darters, and Pelicans of the World*. Washington, DC and London: Smithsonian Institution Press, 1993.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Soper, Tony. *Oceans of Seabirds*. London: David and Charles Publishers, 1989.

Swan, Erin Pembrey. *Pelicans, Cormorants, and Their Kin (Animals in Order)*. Danbury, CT: Franklin Watts, 2002.

Periodicals:

Frederick, Peter C., and Douglas Siegel-Causey. "The Birds of North America, Anhinga, No. 522." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (2002): 1–24.

Hatch, Jeremy J., Kevin M. Brown, Geoffrey G. Hogan, and Ralph D. Morris. "The Birds of North America, Great Cormorant, No. 553." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (2000): 1–24.

McGrath, Susan. "Shoot-out at Little Galloo: Angry Fishermen Accuse the Cormorant of Ruining Their Livelihood." *Smithsonian* (February 2003): 72–78.

Sharp, Eric. "Controversy Surrounds Cormorants." *Outdoor Life* (August 2000): 119.

Web sites:

"Anhinga anhinga." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Anhinga_anhinga.html (accessed on April 12, 2004).

"Anhinga." Museum of Science, Miami, Florida. <http://www.miamisci.org/ecolinks/everglades/anhingainfo.html> (accessed on July 12, 2004).

"Anhinga anhinga." FloridaNature.org. http://www.floridanature.org/species.asp?species=Anhinga_anhinga (accessed on April 12, 2004).

"Aningas and Darters of the World." WorldBirdInfo.net. http://worldbirdinfo.net/search_results.asp?gillfamilyname=ANHINGIDAE:Darters,Aningas (accessed on April 12, 2004).

"Cormorant." The Royal Society for Protection of Birds. <http://www.rspb.org.uk/birds/guide/c/cormorant/index.asp> (accessed on April 12, 2004).

"Double-Crested Cormorant." United States Geological Survey. <http://www.mbr-pwrc.usgs.gov/id/framlst/i1200id.html> (accessed on April 12, 2004).

"Great Cormorant." United States Geological Survey. <http://www.mbr-pwrc.usgs.gov/Infocenter/i1190id.html> (accessed on April 12, 2004).

family CHAPTER

BOOBIES AND GANNETS

Sulidae

Class: Aves

Order: Pelecaniformes

Family: Sulidae

Number of species: 9 species

PHYSICAL CHARACTERISTICS

Boobies and gannets are large seabirds with long, pointed wings, cone-shaped bills, forward-facing eyes, and long necks and tails. Their length is between 25 and 39 inches (64 to 100 centimeters) from their bills to the end of their tails. They are strong fliers and plunge divers—boobies and gannets hit the water headfirst from high in the air in search of fish, and have air sacs under the skin that cushion them when they hit the water.

GEOGRAPHIC RANGE

Boobies and gannets are spread widely over the oceans of the world. Boobies are found mostly in warm tropical or subtropical waters, while gannets usually live in more temperate, cooler regions.

HABITAT

Gannets and boobies live mostly at sea and nest on offshore islands. They usually place their nests on flat ground or on the sides of cliffs. On tropical islands, some also build nests in trees or bushes.

DIET

Boobies and gannets feed mostly on schools of fish in ocean waters. Boobies also catch flying fish and squid. They plunge into the water, and they often swallow their prey before swimming back to the surface. By swallowing the fish underwater, they avoid being pestered by gulls and frigatebirds that might try to steal their catch.

phylum

class

subclass

order

monotypic order

suborder

▲ family



FEATHER BUDDIES

Gannets depend on having smooth wing and tail feathers for their tricky flying, and they need well groomed feathers in order to stay warm in cold water. A gannet fixes its messed-up feathers by running them through its beak. But how can it smooth the feathers on top of its head? One solution is to scratch them with its feet. But during nesting time, gannets have a better solution. Pairs of gannets take turns smoothing the feathers on each other's heads. It is a great way to keep their feathers in shape, and it is also their way of saying, "We belong together."

BEHAVIOR AND REPRODUCTION

These birds are very sociable and nest close together in large colonies. They have developed a lot of different courtship and pair-bonding displays that the pairs use to say that they belong to each other. The birds hardly ever fight, even though they are so near to each other. Instead, they have displays that tell close-by birds to keep their distance.

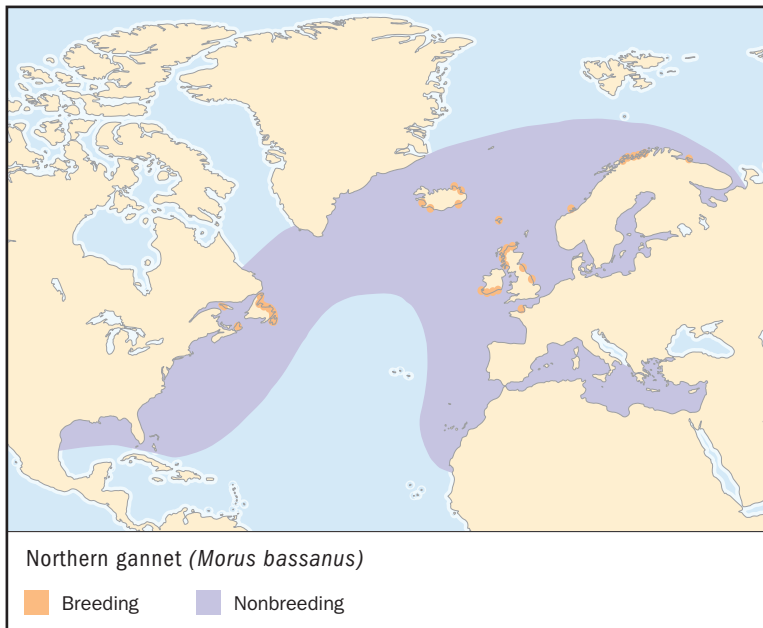
Almost all of these birds lay their eggs right on the ground. The two booby species that use trees and bushes build stick nests. Most of these birds lay only one egg. A few lay two or three, but sometimes only one survives. The parents take turns keeping the eggs warm by wrapping their webbed feet around them, and both of them care for the chicks until they are on their own.

BOOBIES, GANNETS, AND PEOPLE

Over the centuries, boobies and gannets and their eggs have been an important source of food for people when the birds were nesting. Some of the birds' droppings were collected and used for fertilizer on farms, often disturbing the birds on their nests. People still eat the birds on some tropical islands, and bird-watchers enjoy them worldwide.

CONSERVATION STATUS

Abbott's booby is listed as Critically Endangered, facing an extremely high risk of extinction, dying out. It lives only on Christmas Island, where it lost much of its habitat when nesting trees were cleared. The cape gannet is listed as Vulnerable, facing a high risk of extinction, because it has only six breeding colonies. The other gannets and boobies are not in danger of extinction, but many would be better off if their island habitats were protected.



NORTHERN GANNET

Morus bassanus

SPECIES ACCOUNTS

Physical characteristics: The northern gannet is the largest of the three species of gannets. Its feathers are mostly white, with a light rusty color on the back of its head. Northern gannets are between 34 and 39 inches (87 and 100 centimeters) long from their beaks to the end of their tails, and their wingspan is 65 to 70.9 inches (165 to 180 centimeters). Young gannets are mainly dark brown, with feathers gradually lightening until they get their white adult feathers in their fourth year.

Geographic range: Northern gannets breed on offshore islands in the northern Atlantic Ocean. In winter they move south to warmer waters along eastern North America and western Europe and Africa. Some spend the winter in the Mediterranean Sea.

Habitat: Most northern gannets breed on cliffs or flat ground on offshore islands, but some also breed along the rocky shores of continents. When they are not breeding, they spend the rest of the year flying over the ocean, sitting on the water, or diving in to catch fish.



Northern gannets nest very close to each other, but avoid fights by using displays that tell other birds to stay away. (© Hugh Clark/Photo Researchers, Inc. Reproduced by permission.)

Diet: Northern gannets are seabirds that feed mostly on schools of small fish such as herring. They usually plunge-dive headfirst into the ocean, sometimes from more than 100 feet (30 meters) above the water. Just before entering the water, they fold their wings backward alongside their bodies for a smooth entry. Gannets often hunt in big groups of as many as 1,000 birds. Sometimes northern gannets follow fishing boats and snatch the fish parts that are tossed into the water.

Behavior and reproduction: These birds usually stay with their partners for life, and they meet every year at the same nest site. When they meet, they greet each other with many different courtship displays. For example, they stand face to face with their wings out. Then they knock their bills together and bow to one another.

The birds make flat nests of seaweed and grass glued together with their droppings. The nests are crowded together, but they are spaced just far enough apart so that the birds can't peck each other. Each female lays one egg, and both parents care for the chick. The young bird grows amazingly fast, and by the time it is two months old, it may weigh 50 percent more than its parents. At the age of three months, the chick jumps from its nesting ledge after its parents desert it. The young northern gannet stays at sea the first three years of its life, coming to land only to breed.

Northern gannets and people: Humans used to take chicks for food, but in most places that has stopped. Northern gannets attract a lot of birdwatchers because of their huge nesting colonies and their amazing skill at diving.

Conservation status: Northern gannets are not in danger of extinction. Fishing boats that take large numbers of fish in areas where gannets feed are a threat to the birds. ■



BLUE-FOOTED BOOBY

Sula nebouxii

Physical characteristics: These birds are famous for their bright blue webbed feet. They are large seabirds with long, pointed bills, wings, and tails. Their length is between 29.9 and 33.1 inches (76 and 84 centimeters) from their bills to the end of their tails, and their wingspan is about 60 inches (152 centimeters).

Geographic range: Blue-footed boobies live in cool Pacific waters off the coast of northwest Mexico and southward to the coasts of Peru in South America. They are also found on the Galápagos Islands.

Habitat: Blue-footed boobies breed and roost along rocky coasts on cliffs and small islands. They spend their days at sea in cool waters where there are plenty of fish.



Blue-footed boobies keep their eggs warm with their feet, and also protect them from the sun so they do not get too hot. (© Andrew Martinez/Photo Researchers, Inc. Reproduced by permission.)

Diet: Blue-footed boobies feed on fish near the shoreline. They usually fly out in groups from the roosts where they spent the night. When they spot a school of fish below, one booby after the next plunges into the water. Other groups of boobies often see them diving from far away, and they join in the feast. Sometimes they catch flying fish near the surface.

Behavior and reproduction: Male blue-footed boobies have some amusing courtship displays. They march around in a high-stepping dance, showing off their blue feet. They nest on the ground, and the female usually lays two eggs. Then the parents keep the eggs warm with their feet. After they hatch, the young boobies are fed by their parents for more than five months.

Blue-footed boobies and people: The name “booby” comes from the Spanish word *bobo*, which means “stupid or foolish.” Sailors long ago noticed that these birds were not afraid of humans, and thought the birds were foolish for letting them grab them and eat them.

Conservation status: Blue-footed boobies are not in danger of extinction. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Smithsonian Birds of North America*. London and New York: DK Publishing, 2001.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Haley, Delphine, ed. *Seabirds of Eastern North Pacific and Arctic Waters*. Seattle: Pacific Search Press, 1984.

Harrison, Peter. *Seabirds, An Identification Guide*. Boston: Houghton Mifflin Company, 1983.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Periodicals:

Alten, Michelle, and Wolfgang Kaehler. "Home from the Sea." *International Wildlife* (May/June 1994): 44–51.

Alten, Michelle, and Wolfgang Kaehler. "A Tale of 3 Boobies." *International Wildlife* January/February 1998: 28–35.

Mowbray, Thomas B. "The Birds of North America, Northern Gannet, No. 693." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (2002): 1–24.

Ross, Alec. "Tall-Tail Gannets." *Canadian Geographic* (March/April 2004): 24.

Wiley, John P. Jr. "Magnificent Flying Machines." *Sea Frontiers* (May/June 1993): 14–16.

Web sites:

"Abbott's Booby, Recovery Outline." Australian Government, Department of the Environment and Heritage. <http://www.deh.gov.au/biodiversity/threatened/action/birds2000/pubs/abbotts-booby.pdf> (accessed April 15, 2004).

Animal Diversity Web. "Family Sulidae (boobies and gannets)." The University of Michigan Museum of Zoology. <http://animaldiversity.ummz.umich.edu/site/accounts/pictures/Sulidae.html> (accessed April 15, 2004).

"Blue-footed Booby." eNature.com. <http://www.enature.com/fieldguide/showSpeciesSH.asp?curGroupID=1&shapeID=957&display=2&curPageNum=32&recnum=BD0684> (accessed on July 9, 2004).

“Gannets at Muriwai, New Zealand.” Division of Science and Technology, University of Auckland. <http://www.scitec.auckland.ac.nz/hafner/gannets/> (Accessed April 14, 2004).

“Sulidae—Gannets & Boobies.” Animals-Online.be http://www.animals-online.be/birds/genten/northern_gannet.html (accessed April 15, 2004).

PELICANS

Pelecanidae

Class: Aves

Order: Pelecaniformes

Family: Pelecanidae

Number of species: 7 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

There is nothing ordinary about pelicans. The enormous pouches under their long, hooked bills make them easy to recognize. In fact, the Australian pelican may have the longest bill of any bird. Pelicans are also among the heaviest flying birds in the world. They weigh as much as 33 pounds (15 kilograms), and their length is between 41 and 74 inches (105 and 188 centimeters) from the tip of their bills to the end of their tails. They also have long necks and webbed feet. Except for the brown pelican, most of the birds in the pelican family have white or light gray feathers with black wingtips.

GEOGRAPHIC RANGE

Pelicans live on every continent except Antarctica. Brown pelicans live mostly along the coasts of North and South America. The other pelicans usually breed inland, and can be found on all continents except South America.

HABITAT

At breeding time, pelicans prefer nesting areas that are undisturbed, with water nearby where there are plenty of fish. Brown pelicans are the only true seabirds in the group, and they live along seacoasts. In general, the other pelicans breed near freshwater lakes and rivers, although they may spend some time in saltwater areas when they are not nesting.

DIET

Pelicans eat mainly fish, although they may occasionally take lizards, snakes, birds, small mammals, salamanders, and

crayfish. Brown pelicans often catch fish by plunging into the water from the air, while other pelicans usually scoop up fish while swimming.

BEHAVIOR AND REPRODUCTION

Pelicans float high on the water and raise their wings slightly as they float along. When they fly, their head is pulled back over their shoulders to form an S-curve. Groups of pelicans usually fly to their feeding places in a line.

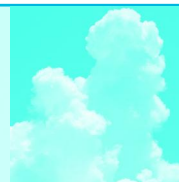
Most pelicans breed in large colonies. Some build tree nests, and others nest on the ground. Female pelicans usually lay two or three eggs, and the adults take turns sitting on them. When they hatch, the chicks are naked and helpless, and often only one survives. The parents regurgitate (spit up) food into their big pouches for the chicks to eat until the young birds are on their own, usually at the age of three months.

PELICANS AND PEOPLE

Pelicans were tamed in ancient Egypt, and they were used as fishing helpers in India. Because they look so strange, there have been many myths, legends, and stories told about pelicans. They were also used as religious symbols for a mother's love.

CONSERVATION STATUS

The spot-billed pelican is listed as Vulnerable, facing a high risk of extinction, and the Dalmatian pelican is close to being threatened. The brown pelican was once listed as Endangered in all of North and South America, but it was removed from the list for Florida and Alabama because it is doing better in those areas.



NO MORE SCRAMBLED EGGS

Fifty years ago, pelicans were plentiful along the U.S. coasts. But by the early 1970s, the birds were completely wiped out in many places. Insect poisons used on farms and in forests had gotten into their food. One of the poisons killed the adult pelicans, and another one made their eggshells thin and weak. Instead of raising babies, the birds found their nests full of scrambled eggs. Without chicks being hatched, many pelican colonies disappeared. When people realized what was happening, they banned the use of the poisons. Now the pelicans are making such a good comeback that they are no longer listed as Endangered in Florida and Alabama, and they're doing much better in other states, too.



SPECIES ACCOUNTS

BROWN PELICAN *Pelecanus occidentalis*

Physical characteristics: Brown pelicans are the smallest pelicans, the only dark-colored ones, and the only pelicans that are seabirds. They have gray-brown backs and black bellies, and most of the year they have a white or yellowish head and neck. But at breeding time,



they get bright yellow heads, a yellow patch on the front of their necks, and dark feathers on the back of their necks. The pouches of the brown pelicans in western states turn from gray to red. The webbing between their toes makes these birds strong swimmers but awkward walkers. They are about 51 inches (129 centimeters) long from their bill tips to their tails, and they weigh about 8.2 pounds (3.7 kilograms).

Geographic range: Brown pelicans live on the seacoasts of North, Central, and South America. They can also be found along the coasts of Cuba and other West Indies islands.

Habitat: Brown pelicans stay close to the ocean year round and nest on islands. They live along the coast and also in estuaries (wet areas near the ocean where saltwater and freshwater mix).

Diet: Brown pelicans are famous for their spectacular headfirst dives from as high as 65 feet (20 meters) in the air. They scoop up fish in their huge pouches. After making a catch, they drain the water out of their pouches before swallowing the fish. They occasionally catch fish while sitting on the water.

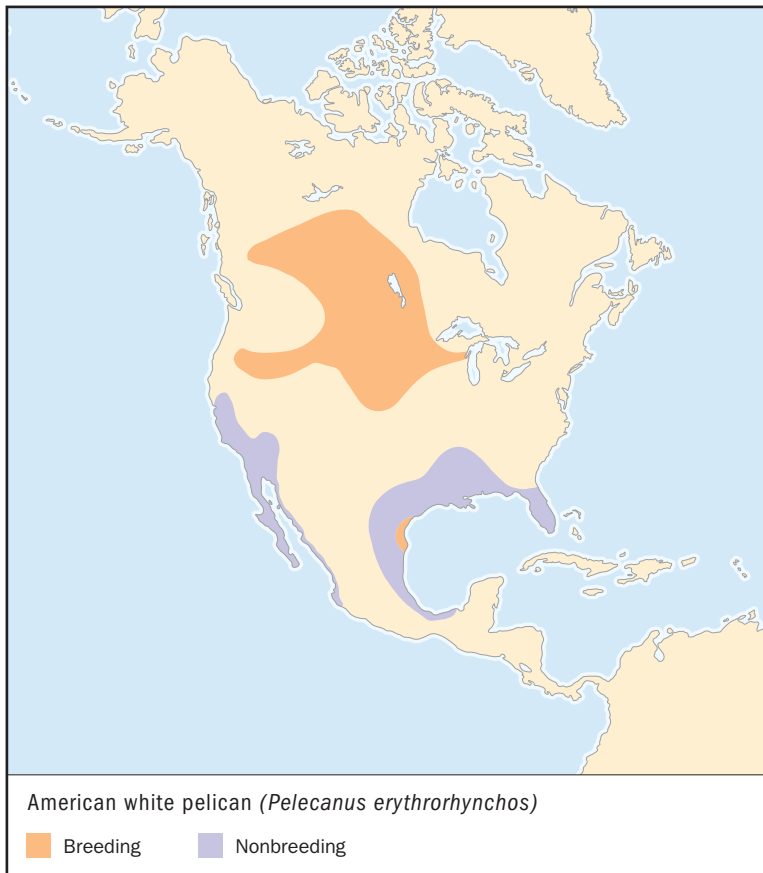
Behavior and reproduction: Brown pelican usually form flocks year round, and they nest in large colonies. They nest on small islands or

Brown pelicans have colorful pouches during the breeding season. (© Gregory G. Dimijian/Photo Researchers, Inc. Reproduced by permission.)

the sides of cliffs, either in trees or on the ground. The females usually lay three eggs, and the parents take turns keeping them warm for about a month. When the naked chicks hatch, they soon start screaming to be fed. The parents feed them regurgitated food from their pouches. Young brown pelicans can fly and feed themselves by the time they are eleven weeks old.

Brown pelicans and people: People love to watch brown pelicans in action, and they are often the main characters in children's stories and poems. Despite the popularity of the birds, people in the United States almost killed them off in many states with poisons intended for insects. The birds are sometimes injured by swallowing fishhooks and getting tangled in fishing lines. In South America, people gather their droppings to use as fertilizer on farms.

Conservation status: Although all brown pelicans were once listed as Endangered, the birds that live in Florida and Alabama have made a such a good comeback that they are no longer on the list. ■



AMERICAN WHITE PELICAN

Pelecanus erythrorhynchos

Physical characteristics: The American white pelican, with its big wings and immense bill, is one of the largest waterbirds in the world. These pelicans are mostly white with yellow-gray crests and black wingtips. During breeding season, both male and female develop a knob on their orange bills. The birds are about 62 inches (157 centimeters) long and weigh an average of about 16.4 pounds (7.4 kilograms).

Geographic range: American white pelicans live mostly in the western and southern parts of North America from Canada to Mexico.

Habitat: In spring, American white pelicans breed mainly on islands in freshwater lakes. They often feed in marshes, rivers, and shallow lakes that are as far as 30 miles (48 kilometers) from the nesting colony. Most of them migrate to warm seashores in fall.

Diet: Flocks of American white pelicans often fish together. They usually sit on the water and dip their bills in to catch fish. They occasionally also eat crayfish and salamanders.

Behavior and reproduction: Despite being large, heavy birds, flocks of American white pelicans often soar very high. Their courtship usually starts with dozens of birds flying over a nesting area. The females generally lay two eggs in nests on the ground, and the parents take turns sitting on the eggs for about a month. The chicks walk away from their nests long before they can fly. They gather in noisy bunches, while their parents fly back and forth with food. The parents regurgitate food and the young pelicans eat from their pouches. At about three months, the young birds are on their own.

American white pelicans and people: American white pelicans do not like to have people near their nesting colonies, and they may desert their nests if people come near. Motorboats and low-flying airplanes also disturb them. Although the pelicans usually eat the kinds of fish that people don't want, sometimes people shoot them because they think the birds are stealing valuable fish.

Conservation status: American white pelicans are not listed as threatened. Their numbers were going down for most of the last century. But people have been doing a better job of protecting them in recent years, and the birds have started several new breeding colonies. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Haley, Delphine, ed. *Seabirds of Eastern North Pacific and Arctic Waters*. Seattle: Pacific Search Press, 1984.

Johnsgard, Paul A. *Cormorants, Darters, and Pelicans of the World*. Washington, DC and London: Smithsonian Institution, 1993.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Soper, Tony. *Oceans of Seabirds*. London: David and Charles Publishers, 1989.

Stuart, Chris and Tilde. *Birds of Africa from Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

Daerr, Elizabeth G. "A Pelican's Progress." *National Parks* (April-May 2002): 30.

de Roy, Tui. "To Swim with Pelicans." *International Wildlife* (January-February 1995): 4-11.

Duckworth, Carolyn. "It's Ralph to the Rescue." *Ranger Rick* (September 1990): 12-16.

Ehman, Amy Jo. "Pelican Brief." *Canadian Geographic* (March/April 2001): 28-32.

Evans, Roger M., and Fritz L. Knopf. "The Birds of North America, American White Pelican, No. 57." *The American Ornithologists Union and The Academy of Natural Sciences* (1993): 1-24.

Fontenot, Bill. "TLC for Pelicans in Louisiana." *Wildlife Conservation* (July-August 2000): 16.

LePelley, Richard. "Two Hungry Fishermen, One Tangled Mess." *Christian Science Monitor* (June 6, 2001): 22, Op, 1c.

Miller, Claire. "Super Scoopers." *Ranger Rick* (July 1999): 6–12.

Ross, John F. "Where the Wild Things Are." (Pelican Island Refuge) *Smithsonian* (March 2003): 66–75.

University of Maryland. "Where the Birds Are, Flight Patterns of Pelicans." *National Wildlife* (February/March 2000): 12.

Web sites:

Fawkes, Ryan. "American White Pelican." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Pelecanus_erythrorhynchos.html (accessed on April 16, 2004).

Steet, Robin. "*Pelecanus occidentalis* (Brown Pelican)." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Pelecanus_occidentalis.html (accessed on April 16, 2004).

Environmental Conservation Online Services. "Pelican, Brown." U.S. Fish & Wildlife Service. http://ecos.fws.gov/species_profile/SpeciesProfile?spcode=B02L#status (accessed on April 17, 2004).

WADING BIRDS AND NEW WORLD VULTURES

Ciconiiformes

Class: Aves

Order: Ciconiiformes

Number of families: 6 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Most of the birds in the order Ciconiiformes (including the heron, hammerhead, stork, New World vulture, shoebill, and ibis families) are wading birds. Recently, the New World vultures (including condors) were switched into this order from a birds of prey family. (The New World vultures live in North and South America. Old World vultures live in the rest of the world and are still considered birds of prey.) The New World vultures were moved into this group with the wading birds because they are more closely related to storks than they are to hawks and eagles, but many people still think of all vultures as birds of prey.

All of the ciconiiforms (birds in the order Ciconiiformes) have big bills and long necks, bulky bodies with short tails, long legs and toes, and large, broad wings. They are all medium to very large birds, and males and females look alike. Very few of these birds have colorful feathers—most are combinations of gray, brown, black, or white. But many of the wading birds and vultures have bare parts on their heads, necks, and legs that are very colorful.

Birds in the heron family (including egrets and bitterns) have some other special features in common. They have a comb-like claw on each of their middle toes. At breeding time, both males and females grow long, showy feathers on their heads, necks, and backs. They also have powder downs, which are feathers that are not shed. Instead, these feathers turn to powder that the birds use to keep their other feathers in good shape.

phylum

class

subclass

● **order**

monotypic order

suborder

family

GEOGRAPHIC RANGE

Members of the order Ciconiiformes are found almost everywhere in the world, except for areas far to the north and south. Most of them prefer warm areas, and those that nest in the coldest places migrate in fall and spring.

HABITAT

Most of the wading birds in this group live in wetlands, from tidal areas (where saltwater and freshwater mix), to swamps, marshes, damp meadows, and forest streams. Some live in grasslands near the wetlands. Just a small percent of the wading birds are able to live in drier areas.

The other birds in this group, the New World vultures, can live wherever they are able to soar on warm air currents and search for carrion (dead and decaying animals). They do not have to depend on wetlands for their food, so they can live practically anywhere, including deserts, mountains, tropical forests, and cities.

DIET

The Ciconiiformes are carnivorous birds. Wading birds catch many different kinds of animals in or near water, including shrimp and other crustaceans, fish, frogs, insects, and snails. Some also feed on small mammals, birds, and reptiles. Very few of them also eat carrion and fruit. The New World vultures feed almost entirely on carrion.

Ibises, spoonbills, and some of the storks have very sensitive bills. They hunt for prey by touch, either by probing in the water and mud with their bills slightly open or by swinging their bills from side to side in the water. The other birds in the order Ciconiiformes search for prey by sight. Most herons and storks stand still or wade slowly through shallow water to stalk their prey. Some of the vultures do not have to see carrion in order to find it—in addition to having good eyesight, they also have a strong sense of smell.

Goliath herons and some other wading birds feed by themselves. These birds protect a feeding territory as large as 3.7 square miles (9.6 square kilometers). Many other wading birds feed in huge flocks. As feeding areas dry out or get flooded, the flocks move around to find the best places to eat.



ON THE MOVE

Since most birds can fly, it is easy for them to move to new places. They usually move in order to find more food, water, or space. When food becomes too hard to find in winter, for example, many wading birds migrate long distances to warmer places. Then, in spring, the birds fly back to the places they left and get ready to raise a new family.

Wading birds often move shorter distances, too. This kind of movement is called dispersal. Most wading birds depend on shallow pools of water for their food, and

many of them live in areas that have rainy seasons and dry seasons. As the pools of water shrink and grow, the birds disperse to areas where the water is just the way they like it.

The wading birds' champion mover is the cattle egret. These egrets used to live just in Africa and Asia. Then some of them flew across the ocean to South America. The first cattle egrets appeared in Florida in 1940, and by now they have spread all across North and South America.

BEHAVIOR AND REPRODUCTION

Most of the Ciconiiformes birds gather in big groups called colonies when they roost at night and when they breed. If they migrate, they usually fly in huge flocks—when birds gather in colonies, they are usually safer from predators that might harm them. Colonies may include many different kinds of herons, storks, and ibises, for example, or they may be made up of all the same species. A few kinds of wading bird pairs stay by themselves when they breed.

For the most part, these birds are not noisy. The vultures do not have a voice box, so the only sounds they can make are soft wheezes and whistles. Storks, shoebills, ibises, and spoonbills also have very little to say most of the year, but some of them squeal, croak, and clap their bills when greeting a mate. The herons are noisier year round, and the loudest birds in the group are the bitterns. They make booming calls to attract mates or proclaim their territories.

Depending on where wading birds live, they nest at different times of the year. The best time to nest is when the most food is available so there is plenty to feed the young. Spring



BILLS THAT “FILL THE BILL”

At first glance, the bills of the birds in this group might look very similar. But although the birds all have large bills, they come in many interesting shapes. The storks' bills are thick and exceptionally long. Most herons have thinner, dagger-shaped bills. New World vultures have beaks with hooked tips and sharp edges that are used for tearing meat. A hammerhead's bill is shaped like some of the storks' bills, but it has a hook on the end, which storks don't have. The bills of ibises turn downward, and shoebills have wide, hooked bills. Spoonbills have the most unusual bills of all. They are long and flat, with a “spoon” on the tip. Whether the bills are used to probe, swish, stab, or tear, they are just what the birds need in order to feed.

and summer is nesting time in the cool weather of the temperate areas. In the warmer subtropical areas, the birds tend to nest during the dry season to avoid the threat of flooding. The birds that live in the tropics near the equator usually nest in the wet season when food is most plentiful.

When wading birds are ready to nest, the males arrive at the nest site first. They defend their territories by stretching and flapping their wings. When the females arrive, the birds often greet each other with a courtship display. This may include bill snapping and tapping, and smoothing each other's feathers. The females usually build the nests with sticks brought by the males. After the eggs are laid, the parents take turns sitting on the eggs and feeding the young. The chicks are blind and almost naked when they hatch. The parents feed them by regurgitating (spitting up) food on the nest floor or by letting the chicks eat it from their open bills.

The New World vultures do not build nests. They lay their eggs on the ground in caves, under bushes, in large tree holes, or even in abandoned buildings. Vulture chicks depend on their parents for a long time.

Young condors do not learn to fly until they are six months old.

WADING BIRDS, NEW WORLD VULTURES, AND PEOPLE

Myths and superstitions have kept many wading birds and New World vultures safe from harm. Native peoples have honored vultures and sacred ibises as gods. White storks were thought to bring babies and considered lucky by Europeans. Some of the wading birds that migrate arrived just as the rains came, and people treated them kindly as “rain-bringers.” Hammerheads and bitterns were thought to bring bad luck and even death, so people often stayed away from them.

Other birds are not so lucky. Herons were killed in North America and Europe because some people thought the birds ate too many fish and were harmful to the fishing industry. Vultures were shot because some farmers thought they killed

calves. And millions of egrets, ibises, and spoonbills were killed so their feathers could be put on fancy hats. Laws now stop people from killing birds for their feathers, but many of the birds in this group are still in trouble.

CONSERVATION STATUS

More than one-fifth of the wading birds and New World vultures are listed as Threatened or Endangered. Many of their problems come from loss of habitat. As the Earth's population grows, people take more and more of the wetlands where the wading birds once lived. They turn the wetlands into farms and cities. Wading birds also suffer greatly from polluted water, and in some parts of the world, they are still shot for food.

Many people, however, are doing what they can to help the birds. The last of the California condors were taken from the wild and bred in captivity—now they are gradually being released into the wild again. Although many birds are still in serious trouble, pollution and hunting laws now protect some of the threatened wading birds. Governments and conservation groups are also working to set aside protected areas for wading birds and New World vultures in many parts of the world.

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Eckert, Allan W. *The Wading Birds of North America*. Garden City, NY: Doubleday & Company, 1981.

Erlich, Paul R., David S. Dobkin, and Darryl Wheye. *The Birder's Handbook*. New York: Simon & Schuster, 1988.

Hancock, J.A., J.A. Kushlan, and M.P. Kahl. *Storks, Ibises and Spoonbills of the World*. London: Academic Press, 1992.

Hancock, James, and Hugh Elliott. *The Herons of the World*. New York: Harper & Row, 1978.

Houston, David. *Condors and Vultures*. Stillwater, MN: Voyageur Press, 2002.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Periodicals:

Berger, Joseph. "In City Bustle, Herons, Egrets and Ibises Find a Sanctuary." *The New York Times* (Dec. 4, 2003): B1.

Montgomery, Sy. "Heavenly Scavengers: Turkey Vultures." *Animals* (March 2000): 26.

Regis, Necee. "The Shy Beauty of the Everglades." *Boston Globe* (February 16, 2003): M1.

Williams, Ted. "Lessons from Lake Apopka: Fish-Eating Birds Dying from Pesticide Poisoning in Florida." *Audubon* (July 1999): 64.

Web sites:

American Ornithologists' Union. <http://www.aou.org> (accessed on March 30, 2004).

Bird Life International. <http://www.birdlife.net> (accessed on March 30, 2004).

Birdnet. "Avian Orders: Ciconiiformes." Smithsonian National Museum of Natural History. <http://www.nmnh.si.edu/BIRDNET/splits/Ciconiiformescl.html#Ciconiidae> (accessed March 31, 2004).

Cornell Lab of Ornithology. <http://www.birds.cornell.edu> (accessed on March 30, 2004).

Georgia Museum of Natural History. <http://naturalhistory.uga.edu> (accessed on March 30, 2004).

Georgia Wildlife Web Site. "Order; Ciconiiformes." The Georgia Museum of Natural History. <http://museum.nhm.uga.edu/gawildlife/birds/ciconiiformes/ciconiiformes.html> (accessed March 30, 2004).

Ornithology Laboratory. "Order Ciconiiformes, Herons and Allies." University of Illinois. http://cm27personal.fal.buffalo.edu/birds/bow/bow_1/ciconiiformes.html (accessed March 20, 2004).

Wetlands International. <http://www.wetlands.org> (accessed March 30, 2004).

family CHAPTER

HERONS AND BITTERNS

Ardeidae

Class: Aves

Order: Ciconiiformes

Family: Ardeidae

Number of species: 62 species

PHYSICAL CHARACTERISTICS

Hérons, egrets, and bitterns are medium to very large wading birds, birds with long legs who walk through shallow water searching for prey. They are 9.7 to 58.5 inches (25 to 150 centimeters) long from beak to tail, and they weigh between 0.16 and 9.9 pounds (73 grams and 4.5 kilograms). They have long necks, which they fold over their backs when flying, and long legs and toes. With the exception of the boat-billed heron, which has a wide, flat bill, these birds all have long, sharply-pointed bills, large eyes, and broad wings.

The birds in the heron, egret, and bittern family have feathers that are combinations of the colors black, gray, brown, and white. They have a comblike claw on each of their middle toes that they use for smoothing their feathers. Another way they keep their feathers in good shape is by putting powder on them. It comes from feathers called powder downs. These are special feathers that turn to powder instead of dropping off. At breeding time, both males and females grow long, showy feathers on their heads, necks, and backs.

GEOGRAPHIC RANGE

Hérons, egrets, and bitterns live on all continents except Antarctica. They also live on islands in all oceans. Many of these birds prefer warm climates, and they live in the tropics year round. The birds that nest in the cooler areas of the world usually migrate in spring and fall.

phylum

class

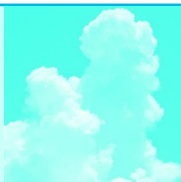
subclass

order

monotypic order

suborder

▲ **family**



UMBRELLAS FOR HUNTING

Black herons and many other herons and egrets sometimes stand looking into the water with wings spread in the shape of an umbrella. This casts a shadow over the water. Scientists thought the birds did this because they could see their prey better in the shade than in the glare of sunlight on the water. However birds also do this on cloudy days. Scientists believe the shadow fools fish into thinking they have found a safe place. When fish swim into the shadow of a big bird's "umbrella," the heron quickly snatches a meal.

HABITAT

Herons, egrets, and bitterns usually live in wetlands, including swamps, tidal areas (where saltwater and fresh water mix), marshes, damp meadows, and forest streams. Most of them feed in water, but they like to have trees nearby for roosting at night and for their nests. Some also live in grasslands, farm fields, or rice fields, and a few kinds are able to live in drier areas.

DIET

Herons, egrets, and bitterns are carnivorous, eating only meat, and most of them eat fish. They wade in shallow water looking for prey, animals they eat, and with a rapid thrust of their long, sharp bills they capture fish. They also eat crabs and other crustaceans, frogs, insects, snails, small mammals, small birds, and reptiles.

BEHAVIOR AND REPRODUCTION

Many kinds of herons and egrets gather in huge flocks to feed together and roost at night. They also nest in groups called colonies that can number from a few birds to thousands. Bitterns are more likely to keep to themselves. The females usually build nests with sticks brought by their mates. Except for bitterns, both parents take turns sitting on the eggs. Newly hatched young are helpless, but they grow quickly on the food their parents bring.

HERONS, EGRETS, BITTERNS, AND PEOPLE

Large colonies of herons and egrets attract the attention of people. Herons, egrets and bitterns were kept them as pets, and killed for food or their feathers for hat decoration. Herons often take advantage of habitats made by people, such as farm ponds, rice fields, reservoirs, city parks, and roadside ditches.

CONSERVATION STATUS

Some herons, egrets, and bitterns are not threatened, but others are close to extinction, dying out. Many of the birds are in

trouble because of wetland pollution and destruction. In some parts of the world they are still hunted for their body parts, or they are killed when they feed at fish farms. Conservation groups are working to save protected areas for these birds and help them make a comeback.

SPECIES ACCOUNTS



GREAT BLUE HERON *Ardea herodias*

Physical characteristics: The great blue heron is about 4 feet (1.2 meters) tall. It is the largest heron in North America. It is between 36 and 54 inches (91 and 137 centimeters) long from bill to tail and it weighs from 5 to 8 pounds (2.3 to 3.6 kilograms). Great blue herons come in two colors. The dark heron has mostly gray feathers, and the other one is completely white.

Geographic range: Great blue herons breed in most of the United States, except for mountains and deserts. They also breed in southern Canada and parts of Mexico. During the cold months, some of the birds migrate as far as northern South America.



Great blue heron breeding pairs perform courtship displays before mating. They usually build their nests in tall trees near water. (© C.K. Lorenz/Photo Researchers, Inc. Reproduced by permission.)

Habitat: Great blue herons live in many different kinds of habitats, from deep-water lakes to dry land. They can be found in both fresh-water and saltwater marshes, mangrove swamps, seashores, meadows, flooded farm fields, and dry pastures.

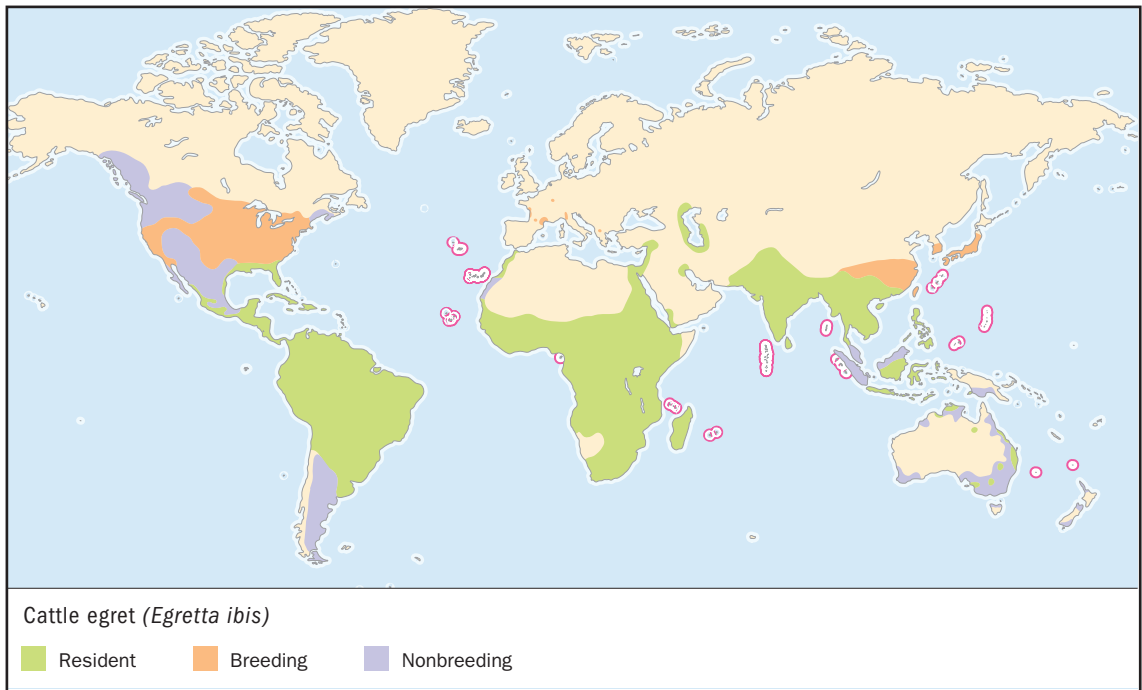
Diet: Fish, both large and small, are the main food eaten by great blue herons. They also eat other animals, including frogs, small mammals, shrimp and other crustaceans, reptiles, small birds, and insects. They feed mostly by standing still in the water or slowly stalking their prey. However they sometimes dive in and swim after fish and other water animals.

Behavior and reproduction: Great blue herons are noisy birds: they squawk and snap their bills loudly. They nest alone or in small colonies and usually build their stick nests in tall trees near water. Their nests are as large as 39 inches (1 meter) across. Females lay two to seven eggs, but often only one or two chicks survive long enough to fly from the nest.

Great blue herons and people: The great blue heron is the best known heron in North America. Most people are fond of them, except for the owners of fish farms. Great blue herons are the topic of

some Native American legends. In one legend, the heron teaches people to stand on their own and have self confidence.

Conservation status: Great blue herons are not threatened. However the population of the all-white great blue herons is getting smaller because of habitat destruction. ■



CATTLE EGRET

Egretta ibis

Physical characteristics: Cattle egrets are white, chicken-sized birds with shorter legs and beaks than most herons and egrets have. They are 18 to 22 inches (46 to 56 centimeters) long from beak to tail and weigh between 12 and 14 ounces (340 and 390 grams). During breeding season, they grow light orange feathers on their heads, backs, and breasts.

Geographic range: Originally they lived only in Africa, Asia, and Australia, but they crossed the Atlantic Ocean to South America and started to spread. In the middle of the twentieth century, they reached North America. Cattle egrets are in all but the coldest areas of North and South America, in addition to Africa, Asia, and Australia.

Habitat: Cattle egrets are more likely to be found in grasslands and farm fields than most herons and egrets. They also live at dumps, on golf courses and athletic fields, rice fields, and lawns. Sometimes they nest with other kinds of wading birds, usually on islands.



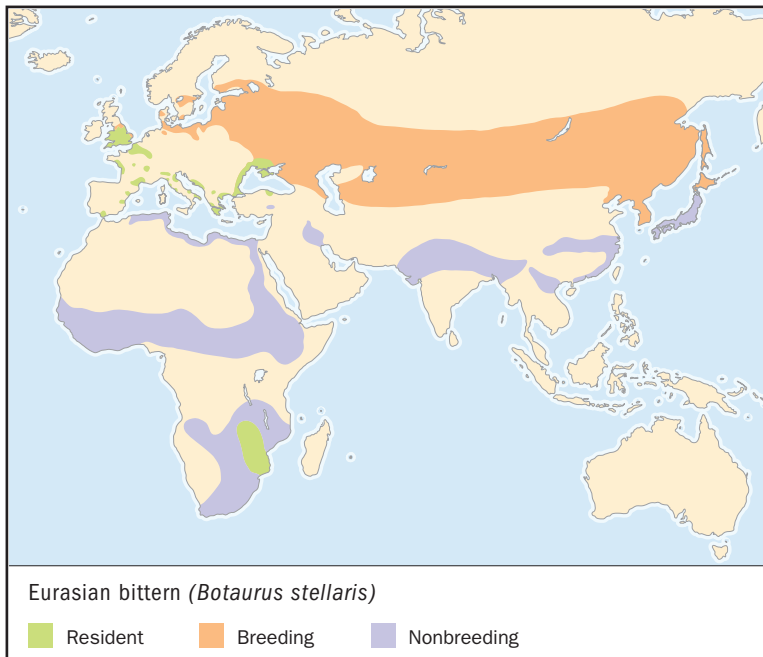
Cattle egrets originally lived only in Africa, Asia, and Australia, but they crossed the Atlantic Ocean to South America and started to spread. They now live in North America, too. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

Diet: Cattle egrets eat mainly insects, especially locusts, grasshoppers, and crickets. They also catch flies, beetles, caterpillars, dragonflies, mayflies, cicadas, spiders, and frogs.

Behavior and reproduction: Cattle egrets often walk near cattle and other hoofed animals, and sometimes they even sit on them. The cattle stir up insects as they walk along, making it easy for the egrets to catch them. Cattle egrets nest in big colonies of a few hundred birds to several thousand pairs. Their stick nests are about 16 inches (40 centimeters) wide. The female usually lays four or five eggs. The chicks leave the nest two weeks after hatching, but they climb around the branches for another two weeks before they fly off.

Cattle egrets and people: Farmers are usually happy to have these insect-eating birds around. But when the birds form huge colonies near towns, some people consider them a nuisance. While trying to control the number of cattle egrets, people sometimes harm less plentiful herons and egrets that are with the cattle egrets.

Conservation status: Cattle egrets are not threatened. The cattle egret is one of the most common egrets or herons in the world. ■



EURASIAN BITTERN

Botaurus stellaris

Physical characteristics: The Eurasian bittern is a thick-necked, medium-sized, golden brown wading bird. It has black feathers on its head and a black “moustache.” These bitterns are between 25 and 31 inches (64 and 80 centimeters) long from beak to tail, and they weigh from 1.9 to 4.3 pounds (0.9 to 1.9 kilograms). The feathers on their backs are speckled, which helps them hide among the plants.

Geographic range: Eurasian bitterns live in Europe, Asia, and Africa.

Habitat: They breed among dense, close together, plants in shallow water. During the rest of the year, they spread out to other wet areas, including ponds, ditches, and rice fields.

Diet: Eurasian bitterns eat fish, frogs, insects, small mammals, small birds, and snakes. They hunt by walking slowly among the plants, lifting their feet high with every step.



Eurasian bittern hunt by walking slowly among the plants in shallow waters, lifting their feet high with every step. (Illustration by Gillian Harris. Reproduced by permission.)

Behavior and reproduction: When a Eurasian bittern spots a predator, it can “freeze” for hours, with its beak pointing upward and eyes pointing forward. It sways like a blade of grass, making it camouflaged (KAM-uh-flajd) among the plants. It defends its breeding and nesting area by making loud, booming noises and fighting on the ground and in the air. A male bittern may have as many as five mates within his territory. Each female usually lays four or five eggs and the young leave the nest two weeks after hatching. They can fly by the time they are fifty-five days old.

Eurasian bitterns and people: As a result of the bittern’s booming call, when it appears in folk tales and legends, it is usually wicked or it brings bad luck.

Conservation status: The Eurasian bittern used to be widespread and abundant, but now it is listed as Vulnerable, facing a high risk of extinction in the wild in the medium-term future, in many areas. ■

FOR MORE INFORMATION

Books:

Arnosky, Jim *Watching Water Birds*. Washington, DC: National Geographic, 2002.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Eckert, Allan W. *The Wading Birds of North America*. Garden City, NY: Doubleday & Company, 1981.

Erich, Paul R., David S. Dobkin, and Darryl Wheye. *The Birder’s Handbook*. New York: Simon & Schuster, 1988.

Hancock, James and Hugh Elliott. *The Herons of the World*. New York: Harper & Row, 1978.

Kaufman, Kenn. *Lives of North American Birds*. Boston: Houghton Mifflin Company, 1996

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Williams, Winston. *Waterbirds of the Northeast*. Tampa, FL: World Publications, 1989.

Periodicals:

Allen, William H. Jr. "Travels of the Cattle Egret." *Grit* (October 13, 2002): 18–19.

Berger, Joseph. "In City Bustle, Herons, Egrets and Ibises Find a Sanctuary." *The New York Times* (December 4, 2003): B1.

Butler, Robert W. "Great Blue Heron, The Birds of North America, No. 24." *The Academy of Natural Sciences, The American Ornithologists' Union* (1992): 1–18.

Hemingway, John. "An African Bird Makes its Move Around the World." *Smithsonian* (May 1987): 60–69.

Horton, Tom. "Great Blues are Going Great Guns." *Smithsonian* (April 1999): 130.

Kerlinger, Paul. "Out of the Blue: Forced South by Snow and Ice, Great Blue Herons in Winter are Adaptable and Unstudied." *Birder's World* (December 2002): 86–89.

Miller, Claire. "Big Blues." *Ranger Rick* (June 1992): 20–26.

National Audubon Society. "A Great Blue Heron Rookery in Weathersfield Has Been Restored." *Audubon* (March 2003): 119.

Runtz, Michael. "The Great Blue Yonder." *Nature Canada* (Autumn 1999): 28–30.

Telfair, Raymond C. II. "Cattle Egret, The Birds of North America, No. 113." *The Academy of Natural Sciences, The American Ornithologists' Union* (1994): 1–28.

Web sites:

"Bitterns." Earthlife.net. <http://www.earthlife.net/birds/bitterns.html> (accessed on April 24, 2004)

"Cattle Egret." New Hampshire Public Television. <http://www.nhptv.org/natureworks/cattleegret.htm> (accessed on April 24, 2004)

Chesapeake Bay Field Office. "Great Blue Heron." U.S. Fish and Wildlife Service. <http://www.fws.gov/r5cbfo/heron.htm> (accessed on April 24, 2004)

"Great Blue Heron." Cornell Laboratory of Ornithology. <http://birds.cornell.edu/bow/gbheron/> (accessed on April 24, 2004)

"Great Blue Heron Page." NatureWildlife.com. <http://www.nature-wildlife.com/blueh.html> (accessed on April 24, 2004)

Ivory, Alicia. "*Bubulcus ibis* (Cattle Egret)" Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Bubulcus_ibis.html (accessed on April 24, 2004)

Naumann, Robert. "*Ardea herodias* (Great Blue Heron)." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Ardea_herodias.html (accessed on April 24, 2004)

HAMMERHEAD

Scopidae

Class: Aves

Order: Ciconiiformes

Family: Scopidae

One species: Hammerhead
(*Scopus umbretta*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

A hammerhead (also called a hamerkop) is a wading bird with strong, medium-long legs and large eyes. “Hammerhead” might seem like a good name for a woodpecker, but this bird’s name comes from the shape of its head and not from its actions. On one end of its head is a big backward-pointing crest, and on the other end is a heavy bill. Between the crest and the bill, the bird’s neck joins its head like the handle of a hammer.

Chocolate-brown feathers cover the hammerhead’s body, with paler feathers on its chin and throat. The female is similar to the male, but slightly larger. The birds are between 20 and 24 inches (50 and 60 centimeters) long from beak to tail, and they have short tail feathers. Their wingspan is 11.6 to 12.4 inches (29.5 to 31.6 centimeters), and they weigh between 14.6 to 15.2 ounces (415 to 430 grams), a little less than a pound. The largest hammerheads are 22 inches (56 centimeters) tall.

GEOGRAPHIC RANGE

Hammerheads live south of the Sahara Desert in the southern two-thirds of Africa. They are also found on the island of Madagascar and in the southwestern part of the Arabian Peninsula. Some of the birds spread out when dry areas become flooded during the rainy season, but they do not migrate in spring and fall. They are common and familiar birds in the places where they live.

HABITAT

Hammerheads are found in almost all types of wetlands. They feed in the shallow waters of lakeshores, riverbanks, ponds, marshes, wetlands near the ocean, and reservoirs behind dams. They usually use large trees near the wetlands for roosting at night and for nesting, but sometimes they use cliffs or rocky hillsides.

DIET

Hammerheads are carnivorous, meat eaters, and they eat many different kinds of animals found in or near water. The prey that they eat varies according to where they live. In south and east Africa, the birds usually catch clawed frogs. In other areas, they are more likely to hunt for small fish. Wherever they live, they also eat shrimp and other crustaceans, small mammals, large insects, worms, and water snails. The hammerheads that live near people sometimes dig around in garbage piles for tasty leftovers.

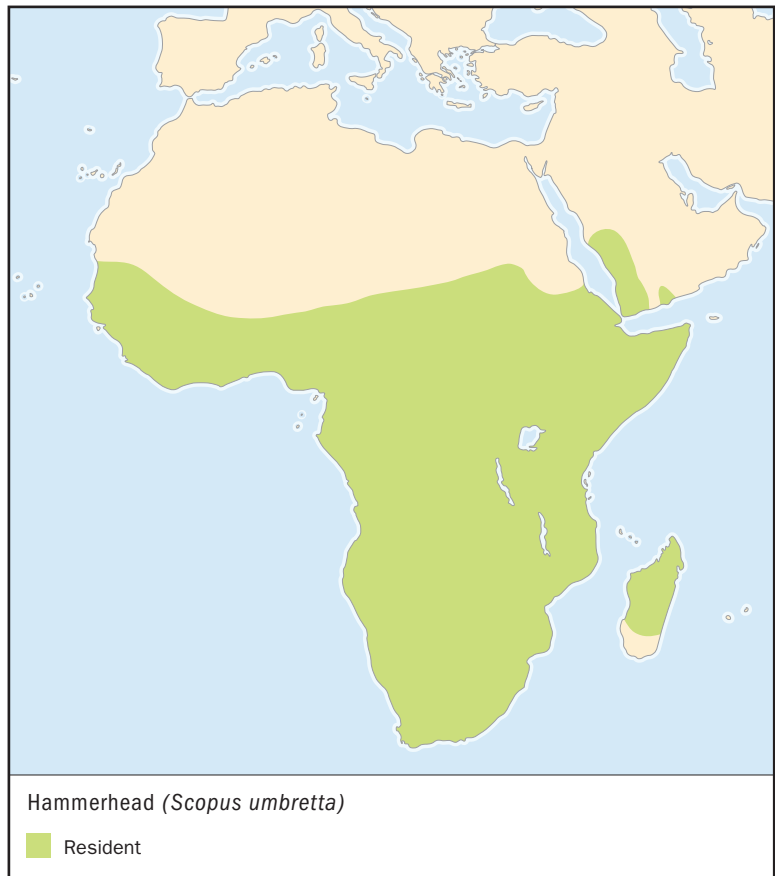
While wading into shallow water, hammerheads pick their prey from among the plants. They may stir up small animals in the water with their feet, or flick their wings to encourage the prey to move. Sometimes the birds hunt from the air. They capture tadpoles or small fish while flying slowly over the water.

BEHAVIOR AND REPRODUCTION

Hammerheads are usually busy feeding, nest building, or caring for their young during daylight hours, although they are less active during the heat of mid-day. Sometimes they are still out and about at twilight, but they settle down to rest and sleep at night. They often hunt for food alone or in small groups, but occasionally large groups (up to fifty birds) may roost near each other in the trees.

At nesting time, hammerheads defend territories, although the territories overlap. The birds breed during the dry season when the wet areas are shrinking. At that time, the frogs, fish, and other prey, animals they hunt for food, are concentrated in smaller areas, and they are easier to catch than during the rainy season. When the prey animals are close together, the parents are able to find plenty of food for their young.

Hammerhead pairs are famous for the huge nests they build. A nest may weigh as much as 55 pounds (25 kilograms) and be strong enough for a person to stand on it. The fork of a tree



is the usual place for a nest. Hammerheads prefer to put their nests about 30 feet (9 meters) off the ground. Occasionally they build their nests on cliffs or even on the ground.

The male and female work together on the nest, usually in the morning and evening. The nest may contain more than 8,000 twigs, branches, and leaves that are stuck together with mud. The birds start with a platform for the floor and then begin work on the thick walls. Many of the nests contain several rooms. The birds leave a small opening in the side with a long tunnel leading into the nest. The tunnel is just big enough for them to go through. When the walls are about 5 feet (1.5 meters) high, the birds add a roof over the top.

Often hammerheads use the same nest year after year, but some pairs build as many as five nests in a season. They may abandon some before they finish building them. While one nest is used for raising young, another may become a place to



It may take a hammerhead pair six months to build their nest, and they may build as many as five in a season, using some and abandoning the rest. (© Nigel J. Dennis/Photo Researchers, Inc. Reproduced by permission.)

roost at night. Still other nests may be taken over by other animals. Eagle owls, barn owls, Egyptian geese, lizards, and snakes (including deadly cobras) have all been seen using hammerhead nests. Small birds may attach their nests to the outside of hammerhead nests, and sometimes they even move right in and share a big nest while the hammerheads are still living there.

After a hammerhead pair has finished building their nest, the female lays between three and seven white eggs. Both parents sit on the eggs and care for the young. The eggs hatch after about thirty days, and at first the chicks have downy, pale brown feathers. They begin to fly from the nest about fifty days after hatching.

HAMMERHEADS AND PEOPLE

There are many superstitions, myths, and legends about hammerheads. Some Africans tell stories about how the birds have magical powers to bring bad luck to people. Some say that hammerheads can tell who will be the next person to die just by looking at the person's reflection in the water. When the

bird spots the unlucky person, it supposedly calls out three warning cries over the person's home, and then the person dies. Another belief is that something bad will happen to people if hammerheads fly over them. It is also said that a hammerhead can cause a house to melt or be struck by lightning, and that it can cause cattle to become sick. One story says that if a pregnant woman imitates the sound of a hammerhead, her baby will cry continuously with the same sound.

When hammerheads are feeding, sometimes they stop eating and skip around each other, opening and closing their wings and uttering a weird cry. These antics remind people of wicked witches chanting spells. Because of all these legends, people have given hammerheads great respect and have tried to stay away from them.

CONSERVATION STATUS

Hammerheads are not in any danger of extinction (dying out).

FOR MORE INFORMATION

Books:

Attenborough, David. *The Life of Birds*. Princeton, NJ: Princeton University Press, 1998.

Burton, Maurice, and Robert Burton. *International Wildlife Encyclopedia*, vol. 8. Tarrytown, NY: Marshall Cavendish, 2002.

Cohen, Sharon A. *Bird Nests*. San Francisco: Collins Publishers, 1993.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Perrins, Christopher M., ed. *The Illustrated Encyclopedia of Birds*. New York: Prentice Hall Editions, 1990.

Rayner, Richard. *Umboko and the Hamerkop*. Harare, Zimbabwe: Baobab, 1988.

Sinclair, Ian, Phil Hockey, and Warwick Tarboton. *Birds of Southern Africa*. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2002.

Periodicals:

"The Hamerkop." *Travel Africa Magazine* Online at <http://www.travelafricamag.com/community.php?id=75> (accessed on March 24, 2004).

Web sites:

Animal Areas. "Hamerkop." Columbus Zoo and Aquarium. <http://www.colszoo.org/animalareas/aforest/hammer.html> (accessed on March 26, 2004).

Anniversary Animals. "Hamerkop." Kansas City Zoo. <http://www.kcmo.org/kc150.nsf/web/hamerkop?opendocument> (accessed March 26, 2004).

Bird Families of the World. "Hamerkop." Monterey Bay. <http://www.montereybay.com/creagrus/hamerkop.html> (accessed March 24, 2004).

Birds of the National Zoo. "Hammerkop." Smithsonian National Zoological Park. http://nationalzoo.si.edu/Animals/Birds/Meet_the_zoos_birds/zoo_bird_info.cfm?bird=Hammerkop (accessed March 26, 2004).

The Columbia Encyclopedia. "Hammerhead." Bartleby, Great Books Online. <http://www.bartleby.com/65/ha/hammerhe.html> (accessed March 26, 2004).

South African Animal Facts & Mythology, "Hamerkop." Dierinbeeld. http://www.dierinbeeld.nl/animal_files/birds/hamerkop (accessed on March 26, 2004).

STORKS

Ciconiidae

Class: Aves

Order: Ciconiiformes

Family: Ciconiidae

Number of species: 19 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Storks are medium to large wading birds, birds who walk through shallow water in search of food. They have long legs, long necks, powerful bills and broad, strong wings. Male and female storks look alike. Scientists think they are more closely related to the vultures of North and South America than to other long-legged wading birds such as herons.

Most of the nineteen kinds of storks have feathers that are different combinations of white, black, and gray, and many have brightly colored bills. Storks are 30 to 60 inches (75 to 152 centimeters) long from beak to tail, and they weigh between 2.9 and 19.7 pounds (1.3 and 8.9 kilograms).

GEOGRAPHIC RANGE

Storks are found on all continents except Antarctica. Most live in the warm areas of Europe, Asia, and Africa. The wood stork is the only kind that lives that lives in North America.

HABITAT

Storks are found in a wide variety of habitats. Many live in or near wetlands with shallow water. Some, such as the marabou (MARE-uh-boo), prefer drier grasslands within flying distance of rivers or lakes. Black storks nest in the forests of Europe and Asia near pools and rivers. Some storks do not mind living near people and some nest on buildings in European towns and cities.

DIET

Storks are carnivorous, meat-eaters. They eat many different kinds of animals found in or near water, including fish, frogs, insects, and snails. Some storks hunt for food by feeling underwater with their sensitive bills. Others watch for their prey and grab it. Marabou storks sometimes feed on carrion, dead and decaying flesh, just as vultures do. Since a marabou's head and neck are bare, it can poke deep inside a dead animal's body without messing its feathers.

BEHAVIOR AND REPRODUCTION

Storks can soar high in the sky on rising warm air currents, and most of them fly with their necks and legs stretched out. Much of the year, storks keep to themselves or form small flocks. But at breeding time, some storks nest in big groups called colonies, while others nest alone or in small groups.

Storks have various courtship displays, including dancing movements and loud bill clattering. Both parents help build platform nests of sticks and twigs, usually in trees. They raise an average of five chicks, and the young storks are ready to have families of their own when they are between three and five years old.

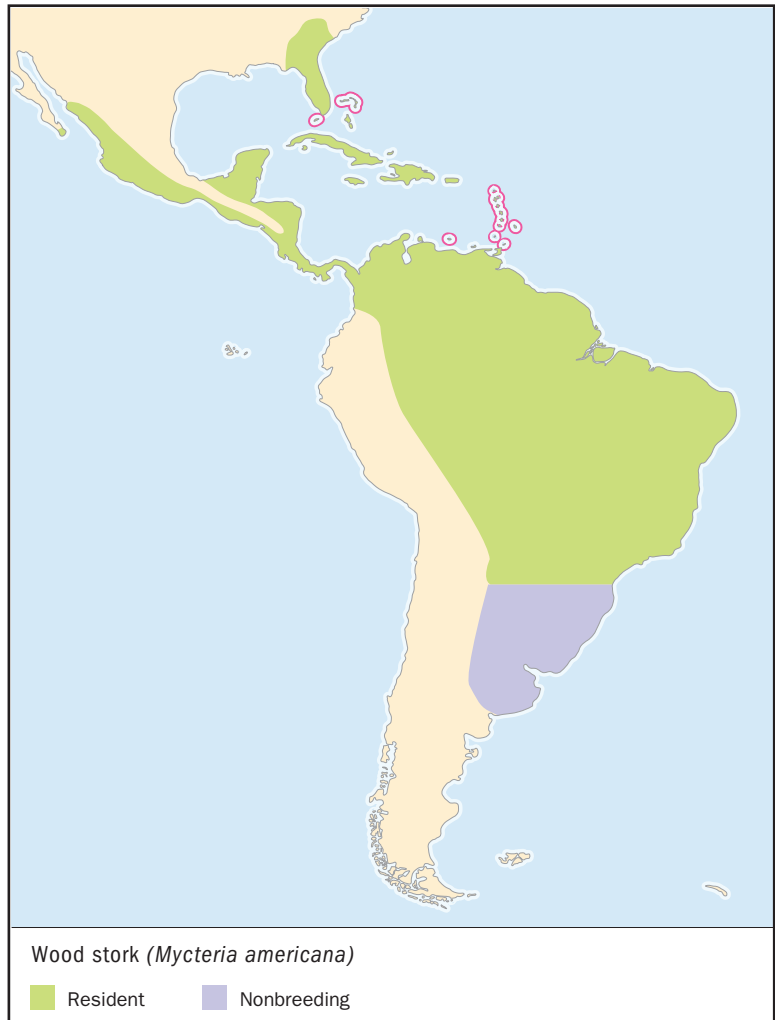
STORKS AND PEOPLE

Most people who live near storks are fond of the birds and want to protect them. Having storks around is a sign of good luck for some communities. Tourists enjoy going places where they can see the big birds. Storks are also the topic of many stories, myths, and folk tales. Some people hunt them for food because they are big and have a lot of meat.

CONSERVATION STATUS

The Oriental white stork, Storm's stork, and the greater adjutant are listed as Endangered, facing a very high risk of extinction in the wild. The lesser adjutant and the milky stork are considered Vulnerable, facing a high risk of extinction in the wild. Also many populations of storks are declining because the places they need to live are being taken over by human building projects. Wood storks are not listed as endangered in most places, but they are on the U.S. Endangered Species List.

SPECIES ACCOUNTS



WOOD STORK *Mycteria americana*

Physical characteristics: Wood storks have crusty gray skin on their bare heads and necks. Their body feathers are white, and they have black flight feathers. They are between 33 and 40 inches (83 and 102 centimeters) long from beak to tail. Their wings stretch 59 inches (150 centimeters) from tip to tip, and they weigh between 4.4 and 6.6 pounds (2 and 3 kilograms).



Wood storks hunt by touch, catching fast-moving fish without seeing them. Scientists have found that when a fish touches the bill of a wood stork, it can react in 0.025 seconds to snatch it, the fastest reaction time of any known vertebrate, animal with a backbone. (Lynn M. Stone/Bruce Coleman Inc. Reproduced by permission.)

Geographic range: Wood storks are found in southeastern United States and southward through the tropical areas of Mexico, Central America, and South America. They are the only storks that live in North America.

Habitat: Wood storks live in wetlands with shallow water. They often breed among the bald cypress trees, conifer trees with needles that grow in wetlands.

Diet: A wood stork eats mostly fish, and it catches them without having to see them. It sweeps its open bill through shallow water. The instant it feels a fish, frog, crayfish, or other small prey, it snaps its bill shut to capture the prey.

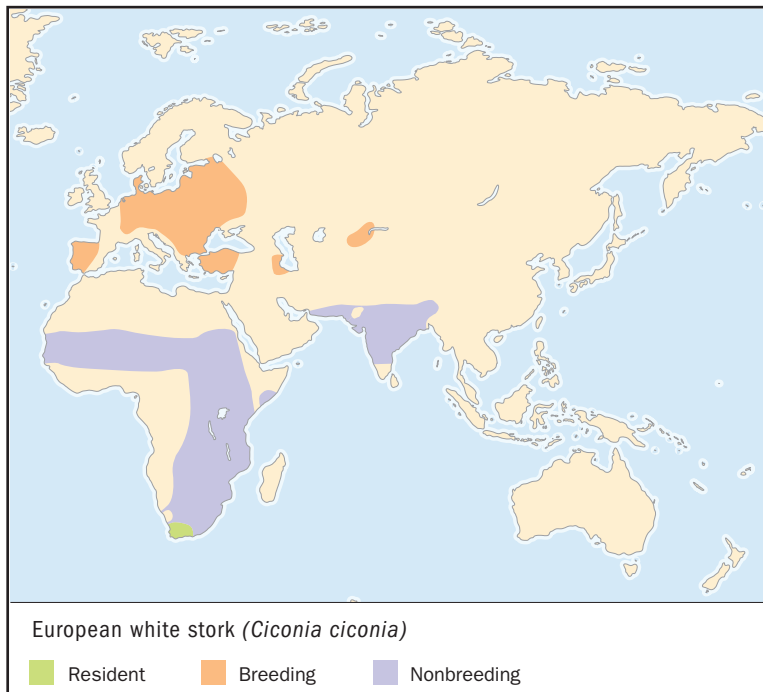
Behavior and reproduction: Many wood storks raise their young during the dry season. As the pools of water shrink, the creatures living in them have to swim closer together. That makes it easier for the storks to find food.

When the time is right, the male stork chooses a nest site, usually high up in a bald cypress tree. Then the male collects sticks while the female waits at the nest site. After the nest is built, the female usually lays three eggs. Both males and females incubate, sit on and warm, the eggs. Eggs usually hatch after twenty-eight to thirty-two days. The hungry chicks eat more than half their weight in food

every day. They grow quickly and are ready to leave the nest in about two months.

Wood storks and people: When wood storks nest, it is a sign that wetlands are healthy. In folklore, storks are responsible for the delivery of babies.

Conservation status: Wood storks are not considered endangered in most places, but they are on the endangered species list in the United States because of habitat loss. ■



EUROPEAN WHITE STORK

Ciconia ciconia

Physical characteristics: European white storks have white feathers on the head and body and their wings are black. Their long bills and tall legs are red orange. The birds are 39 to 40 inches (100 to 102 centimeters) long from beak to tail, and they weigh between 5.1 and 9.7 pounds (2.3 and 4.4 kilograms). Their wingspan is 61 to 65 inches (155 to 165 centimeters).

Geographic range: Most European white storks spend the winters in tropical Africa and India, and they nest in Europe and western Asia. Some also live year-round at the southern tip of Africa.

Habitat: European white storks prefer open lands without tall trees or thick vegetation, usually in or near wetlands. They sometimes nest in towns and cities.

Diet: Unlike wood storks, European white storks find their food by sight. They eat a variety of animals, from insects and earthworms, to lizards, snakes, and frogs.



Most European white storks spend the winters in tropical Africa and India, and they nest in Europe and western Asia. They prefer open areas, but also nest in cities and towns.

(© U. Walz/OKAPIA/Photo Researchers, Inc. Reproduced by permission.)

Behavior and reproduction: European white storks migrate for long distances between their wintering areas in Africa and India to their nesting places in Europe and Asia. They soar high on warm air currents and follow the same migration routes year after year.

In spring, male storks arrive at the nesting place first. Males often return to the same nests used in previous years and add more sticks and grass to them. An old nest may grow to be as big as a car. Some males build new nests. Female storks arrive about a week later. The birds have a noisy courtship display: they tilt their heads back and click their bills. This clattering noise can be heard from far away. The females lay an average of four eggs. Incubation is done by both parents and eggs hatch after thirty-three to thirty-four days. At eight to nine weeks the young birds fledge, grow the feathers needed for flight.

European white storks and people: People are fond of European white storks because they say that the birds bring good luck. The birds help control pests by eating bothersome insects and other unwanted animals.

Conservation status: European white storks are listed as threatened. In Africa, people poison insects and other animals that eat crops. So the storks have less food to eat, or they eat poisoned animals and die. In Europe, many of the storks' wetlands have been turned into

farms and cities. Some of the storks are hunted on their migration trips or are killed by collisions with power lines. Groups are working to protect the storks from extinction, dying out. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America, Smithsonian Handbooks*. New York: DK Publishing, Inc., 2001.

Attenborough, David. *The Life of Birds*. Princeton, NJ: Princeton University Press, 1998.

De Jong, Meindert. *The Wheel on the School*. New York: Harper Trophy, 1999.

del Hoyo, Josep, et al. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Garcia, Eulalia, et al. *Storks: Majestic Migrators (Secrets of the Animal World)*. Milwaukee: Gareth Stevens Publishing, 1997.

Kress, Stephen W., Ph.D. *Birder's Handbook, National Audubon Society*. London: Dorling Kindersley, 2000.

Perrins, Christopher M., ed. *The Illustrated Encyclopedia of Birds*. New York: Prentice Hall Editions, 1990.

Sibley, David Allen. *The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, 2001.

Periodicals:

Kenny, Brian. "Ol' Flinthead: The Endangered Wood Stork Ignites a Passion in Birders to Protect Florida Wetlands." *Birder's World* (June 1998): 42-45.

Manry, David E. "Living on the Edge." *Birder's World* (October 1990): 10-14.

Miller, Claire. "The All-American Stork." *Ranger Rick* (April 1996): 38-43.

Web sites:

Animal Bytes. "Marabou Stork" Sea World. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordates/craniata/aves/ciconiiformes/marabou-stork.htm> (accessed on April 25, 2004)

Everglades National Park. "Wood Stork." National Park Service. <http://www.nps.gov/ever/eco/wdstork.htm> (accessed on April 25, 2004)

Klinkenberg, Jeff. "Coming Back on Its Own Terms." National Wildlife. <http://www.nwf.org/nationalwildlife/article.cfm?articleid=679&issueid=17> (accessed on April 25, 2004)

Save Our Everglades. "The Wood Stork: An Indicator of an Endangered Everglades." Everglades Foundation. http://www.saveoureverglades.org/education/education_wildlife_stork.html (accessed on April 25, 2004)

WildWatch Article. "Storks—Long-Beaked Predators." African Wildlife & Conservation. <http://www.wildwatch.com/magazine/feature1.asp> (accessed on April 25, 2004)

Williams, Laura. "Letters From the Cabin—A Lone Russian Crusader Takes on the Communist Bureaucracy to Protect a Forest Home of the Rare Black Stork." *International Wildlife* (November–December 2001). Online at <http://www.nwf.org/internationalwildlife/article.cfm?articleid=4&issueld=1> (accessed on April 25, 2004).

Wolkomir, Richard and Joyce. "In Search of Sanctuary." *Smithsonian* (February 2001) Online at <http://www.smithsonianmag.si.edu/smithsonian/issues01/feb01/storks.html> (accessed on April 25, 2004)

Youth, Howard. "Landfill Magic." *National Wildlife* (August/September 2002) Online at <http://www.nwf.org/nationalwildlife/article.cfm?articleid=522&issueid=45> (accessed on April 25, 2004)

family CHAPTER

NEW WORLD VULTURES

Cathartidae

Class: Aves

Order: Ciconiiformes

Family: Cathartidae

Number of species: 7 species

PHYSICAL CHARACTERISTICS

The vultures living in the New World, North and South America, generally have dark black, brown, and gray feathers. However condors and king vultures also have some white feathers. The color of the skin on the birds' bare heads and necks are combinations of gray, red, blue, and yellow. The birds weigh between 2.1 pounds and 33 pounds (0.94 and 15 kilograms). The length of the birds in this family ranges from 23 to 53 inches (58 to 134 centimeters) from their beaks to the end of their tails.

Until recently, New World vultures were grouped with hawks as birds of prey. But scientists have found that these vultures are more similar to storks than they are to hawks. For example, their feet are weak like storks, and they do not have the strong, grasping claws that hawks use to catch live animals.

GEOGRAPHIC RANGE

New World vultures range from southern Canada to the southern tip of South America. The turkey vulture and the black vulture are the two most common vultures in North and South America, and they are sometimes called buzzards.

HABITAT

These birds can live in almost any habitat, from seashores to deserts to forests, as long as they can find carrion, dead and decaying animals, to eat. All vultures hunt by soaring high and looking down for food. However turkey vultures and yellow-headed

phylum

class

subclass

order

monotypic order

suborder

▲ family



DECAYING DINNER

Most creatures would get sick or die if they ate the decaying meat that vultures eat. Of course, vultures prefer their meat to be as fresh as possible. But often they have to wait for the predators that killed the animal to go away. Or they have to let dead animals decay for a while before they can tear it apart. Vultures have chemicals in their stomachs that protect them from the germs in their food. So if meat gets rotten while they wait, it's still okay for vultures.

vultures have an especially good sense of smell and can sniff out small, dead animals in dense forests without having to see them first.

DIET

New World vultures are scavengers, eating carrion rather than killing their own food. They wait for other animals, or cars, to kill their food. They also eat animals that die from disease or old age. They usually find their food while soaring high in the air. If they see other vultures flying down or eating on the ground, they try to join them. The biggest birds, the condors and king vultures, can tear apart the hides of large mammals. But most of these vultures get at the meat through natural openings, such as the mouths and eyes. Or, if an animal has been killed by a wolf or other predator, they may watch and wait until the predator leaves and then take their turn.

BEHAVIOR AND REPRODUCTION

Before flying in the morning, New World vultures usually find a sunny spot where they can spread their wings. The sunshine warms their bodies and helps to straighten their flight feathers. They wait until the winds pick up before taking off. They roost together at night and they hunt for food in flocks, but at breeding time they spread out and nest by themselves.

New World vultures usually mate for life. As part of their courtship display, a pair flies high over the nesting area with wingtips almost touching. This may tell neighboring pairs to stay away. Female vultures lay their eggs directly on the ground in the floor of a cave or in a tree hole. The condors and king vultures lay only one egg and other vultures usually lay two. The parents take turn sitting on the eggs and feeding the chicks. Young condors learn to fly at about six months, and the smaller vultures learn by the time they are three months.

NEW WORLD VULTURES AND PEOPLE

New World vultures have been important in the myths and legends of people for thousands of years. In South America,

pictures of Andean condors have been found on ancient pottery, carvings, and cloth. In North America, vultures were thought of as symbols of death. Many people are fascinated by vultures and like to watch them in action.

CONSERVATION STATUS

California condors are listed as Critically Endangered, which means they are facing an extremely high risk of extinction in the wild. Andean condors are considered Near Threatened, meaning they are close to becoming endangered. Not all vultures are in trouble. In fact, turkey vultures have been spreading northward into Canada for the last thirty years.

SPECIES ACCOUNTS



KING VULTURE *Sarcoramphus papa*

Physical characteristics: The feathers on king vultures' bellies and backs are white, and the large flight feathers on their wings are black. It is the most colorful New World vulture with bright red, yellow, orange, blue, and purple patches on its wrinkled head, its smooth neck, and the wattle, a flap of skin, above its beak. The length of a king vulture is between 28 and 32 inches (71 and 81 centimeters), and it weighs between 6.6 and 8.3 pounds (3 and 3.8 kilograms).

Geographic range: King vultures live from southern Mexico to northern Argentina in South America.

Habitat: King vultures are most commonly found in rainforests, but they also live in grasslands and among grazing cattle.

Diet: King vultures find carrion by circling high in the sky. If they notice smaller vultures eating at a carcass, king vultures fly down and take over. King vultures can tear apart large animals better than the smaller vultures.

Behavior and reproduction: King vulture females lay a single egg in a hollow tree, sometimes high off the ground. Both parents care

for the chick. Young birds can fly at three months, but they depend on their parents for feeding for a few more months.

King vultures and people: King vultures are so colorful that artists like to use them as the subject of their work.

Conservation status: King vultures are not listed as endangered. ■



CALIFORNIA CONDOR

Gymnogyps californianus

Physical characteristics: The California condor is one of the largest birds in North America and one of the rarest. They have black feathers except for a triangle of white under each wing. Adults also have red heads and necks and “collars” of fluffy black feathers at the bottom of its neck. California condors are between 46 and 53 inches (117 and 134 centimeters) long from their beaks to the end of their tails, and they weigh from 17 to 24 pounds (7.7 to 10.9 kilograms).

Geographic range: The last of the wild California condors were captured in 1987 in order to keep them from going extinct, dying out, and so they could be raised in captivity. So far, the birds have



The last of the wild California condors were captured in 1987 in order to keep them from going extinct, dying out, and so they could be raised in captivity. So far, the birds have been returned to the wild in the mountains of California, Arizona, Utah, and in Mexico just south of the border. (© Kenneth W. Fink/Photo Researchers, Inc. Reproduced by permission.)

been returned to the wild in the mountains of California, Arizona, Utah, and in Mexico just south of the border.

Habitat: California condors roost and nest in mountains where strong winds allow them to fly long distances. They search for carcasses in open areas such as grasslands and beaches.

Diet: Not only do California condors eat the carcasses of wild land mammals and farm animals, but they also look for dead ocean animals along the seashore. With their large, powerful beaks they are able to tear open the thick skins of these animals.

Behavior and reproduction: California condors are curious birds, and they often find food by watching what other species are doing. Condors can travel hundreds of miles in a single day in search of food. At the age of five or six years, they find for a mate for life. The female lays one egg every other year in a cave or on a cliff ledge. Both parents incubate, sit on and warm the egg, which hatches after about fifty-six days. The parents care for the young bird long after it learns to fly at the age of six months.

California condors and people: Before Europeans came to America, Native Americans along the California and Oregon coasts admired California condors and honored them in stories and art. They also used the birds' feathers and bones for ceremonies. As Europeans started to settle in the west, they shot, trapped, and poisoned condors because they thought the birds killed young farm animals. By the late twentieth century people realized that this was not true, but it was almost too late to save the birds from extinction.

Conservation status: California condors are listed as Critically Endangered. In 1987, all wild condors were captured to prevent them from going extinct. By the year 2004, breeding programs had increased the California condor population to more than 200, and about half of the population had been released back into the wild. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. *Smithsonian Handbooks: Birds of North America* London, New York, Sydney: DK Publishing, Inc., 2001.

Burton, Philip and Trevor Boyer. *American Nature Guides, Birds of Prey*. New York: Gallery Books, 1991.

Burton, Philip, and Trevor Boyer. *Birds of Prey*. New York: Gallery Books, 1989.

Grady, Wayne. *Vulture: Nature's Ghastly Gourmet*. San Francisco: Sierra Club Books, 1997.

Johnson, Jinny. *Vultures (Predators)*. Orlando: Raintree-Steck Vaughn, 2003.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

Kops, Deborah. *Vultures (Wild Birds of Prey)*. Farmington Hills, MI: Blackbirch Marketing, 2000.

Miller, Sara Swan. *Birds of Prey: Falcons to Vultures (Animals in Order)*. Danbury, CT: Franklin Watts, 2001.

Perrins, Christopher M. *The Illustrated Encyclopedia of Birds*. New York, London, Toronto: Prentice Hall Press, 1990.

Proctor, Noble S. *Manual of Ornithology, Avian Structure and Function*. New Haven, CT, and London: Yale University Press, 1993.

Rauzon, Mark J. *Vultures (First Books—Animals)*. Danbury, CT: Franklin Watts, Incorporated, 1997.

Schafer, Susan. *Vulture (Remarkable Animals Series)*. Parsippany, NJ: Silver Burdett, 1995.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, 2001.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Turner, Ann Warren. *Vultures*. New York: David McKay Company, Inc., 1973.

Wilbur, Sanford R., and Jerome Jackson. *Vulture Biology and Management*. Berkeley, Los Angeles, London: University of California Press, 1983.

Periodicals:

Boyle, Robert H. "Nothing Tastes Like Roadkill." (turkey vultures) *Sports Illustrated* (April 7, 1997): 3–4

"California Condors." *National Parks* (January/February 2001): 25.

de Roy, Tui and Mark Jones. "King of the Jungle." *International Wildlife* (November/December 1998): 52–57.

Houston, David C. "To the Vultures Belong the Spoils." (turkey vultures) *Natural History* (September 1994): page 34–41.

Hudson, Laura. "Diverse Challenges in the Intermountain Region." (California condors and other species) *Endangered Species Update* March/April 2002): 14–15.

"Insight: King Vultures." *Current Science* (February 11, 2000): 2.

Mealy, Nora Steiner. "Adventures of Ranger Rick: California Condors." *Ranger Rick* (February 2002): 18–20 and (March 2002): 18–20.

Miller, Claire. "It's Great to be Gross." (vultures) *Ranger Rick* (October 2001): 14–19.

Montgomery, Sy. "Heavenly Scavengers: Turkey Vultures." *Animals* (March 2000): 26.

"Nature's Street Cleaners." *Audubon* (January 2000): 16.

"On the Comeback Trail?" *Ranger Rick* (August 2003): 20.

"Rain Forest Ruler: The King Vulture." *National Geographic* (September 1999): Preceding page 1.

Richman, Elaine A. "Saving the California Condor." *National Geographic World* (June 2002): 20–21.

Snyder, Noel F. R., and N. John Schmitt. "The Birds of North America, California Condor, No. 610." *Cornell Laboratory of Ornithology and The Academy of Natural Sciences* (2002): 1–34.

"Spreading Wings; Condor Breeding." *The Economist (US)* (January 25, 2003): 87–88.

Weingarten, Tara. "Environment: Congratulations! It's a Baby Condor!" *Newsweek* (August 18, 2003): 10.

Web sites:

Animal Bytes. "California Condor." San Diego Zoo. <http://www.sandiegozoo.org/animalbytes/t-condor.html> (accessed on April 27, 2004).

Attwood, Erin Jane. "Cathartes aura (Turkey Vulture)." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Cathartes_aura.html (accessed on April 27, 2004).

"California Condor Restoration." The Peregrine Fund. http://www.peregrinefund.org/notes_condor.html (accessed on April 27, 2004).

"California Condors Return to Mexico." U.S. Fish & Wildlife Service News Release. <http://news.fws.gov/newsreleases/r1/33CCBB36-A3BD-46F7-93D11782CE63D3AD.html> (accessed on April 27, 2004).

"Endangered Species, Condors." U.S. Fish & Wildlife. http://endangered.fws.gov/50cfr_animals.pdf (accessed on April 27, 2004).

"King Vulture." The Belize Zoo. <http://www.belizezoo.org/zoo/zoo/birds/vul/vul1.html> (accessed on April 27, 2004).

Kohlmoos, Bill. "Some Interesting Information About the Turkey Vulture." The Turkey Vulture Society. <http://www.accutek.com/vulture/facts.htm> (accessed on April 27, 2004).

"New World Vultures, Cathartidae." MontereyBay.com. <http://www.montereybay.com/creagrus/vultures.html> (accessed on April 27, 2004).

Rainforest Alliance Learning Site. "King Vulture." Rainforest Alliance. <http://www.rainforest-alliance.org/programs/education/elsalvador/species-profiles/king-vulture.pdf> (accessed on April 27, 2004).

SHOEBILL

Balaenicipitidae

Class: Aves

Order: Ciconiiformes

Family: Balaenicipitidae

One species: Shoebill
(*Balaeniceps rex*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Shoebills are large, gray wading birds, birds that search for food in shallow water, that stand about 4.5 feet (1.4 meters) tall. They are named for their enormous bills that look like wooden shoes. Some people call them whale-heads because their heads are shaped like the body of a blue whale. In any case, their huge hooked bills make them easy to recognize. Although shoebills have similarities to herons and storks, they are in a family all by themselves. Scientific tests show that they may be more closely related to pelicans than storks and herons.

Shoebills have gray patches on their yellowish bills. Some people can tell individual shoebills apart by the bill markings. Shoebills' legs and toes are long, and they have unusually large, front-facing eyes with yellow irises. On the back of their heads, they have a small crest that rises when they are frightened or excited. shoebills are about 4 feet (1.2 meters) in length from the tip of their bills to the end of their tails, and their wingspan is 8.5 feet (2.6 meters). Their bills are 7.5 inches (19.1 centimeters) in length and their toes are between 6.6 and 7.3 inches (16.8 and 18.5 centimeters) long. Male shoebills are a little larger than the females.

GEOGRAPHIC RANGE

Shoebills live in central Africa. Most of them are in southern Sudan and northern Uganda. Some are also found in Tanzania, Democratic Republic of Congo, Central African Republic, and Rwanda.

HABITAT

Shoebills live in swamps or beside marshy lakes or rivers where floating ferns, cattails and papyrus (puh-PIE-rus) grow. Papyrus is a tall water plant that covers some swampy areas.

DIET

Shoebills are carnivores, meat eaters, which eat mostly fish. They spread out over the water and keep to themselves when they are fishing. Shoebills have three different ways of fishing. They often stand in the water, waiting for prey to swim by. They can stand almost motionless with their bills pointing downward for a half hour or longer. Sometimes they stand on floating plants and watch for prey. Their long toes spread their weight on the plants, but after a while, the birds gradually sink into the water. If there is an open channel of slow-moving water, shoebills might walk slowly along it. Channels are trails that big mammals make through the thick water plants, opening up places where shoebills would not be able to go otherwise.

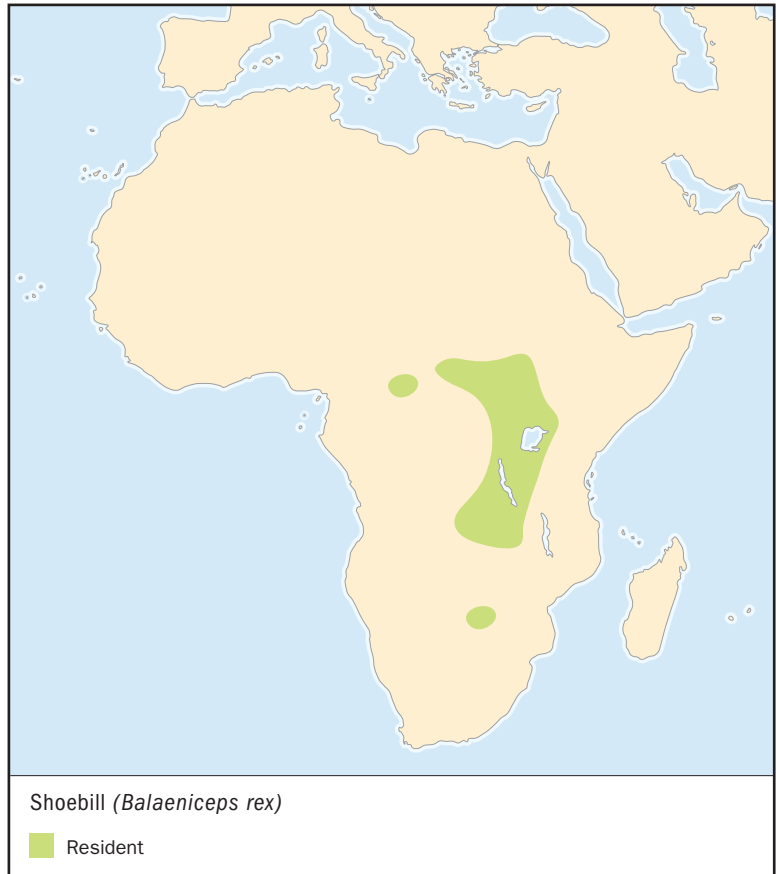
The best place for shoebills to fish is a marsh or pond where the water is drying up. Then large numbers of fish have to swim close together and they are easy to catch. Shoebills eat mostly lungfish and other fish that swim near the surface. But they also catch turtles, water snakes, lizards, frogs, young crocodiles, young water birds, snails, and rodents. They catch fish that are as long as 19 inches (48 centimeters). They prey catch by sight and possibly by hearing, but shoebills are not able to feel the underwater animals with their bills.

When shoebills are fishing, they stand and point their bills straight down so that they can see with both eyes. If they spot a fish or other water animal, they instantly throw their wings forward and their heads downward. Then they quickly snap up the prey with their bills. The hook on their bills helps to hold slippery prey. After swallowing prey, shoebills usually drink some water.



A WILD WAY TO STAY COOL

When people have wet skin, they usually feel cooler than when it is dry. Storks, New World vultures, and possibly shoebills have discovered the same thing. They often squirt their liquid droppings onto their legs to cool off. As the liquid evaporates, the blood in their legs is cooled. Then the cool blood circulates to the rest of the bird's body. Scientists have studied the birds' body temperatures when their legs are wet and when they are dry, and they have found that the birds are cooler when their legs are wet.



BEHAVIOR AND REPRODUCTION

Shoebills usually fly low and not very far, but they can also spread their broad wings and soar high on warm air currents. If a shoebill is frightened while feeding, it flies straight up and flaps slowly and silently away, with its head tucked back onto its breast. But it soon lands again and continues to stand or move along silently.

The shoebills living in each part of Africa have learned when it is best for them to breed. In some areas, the birds wait until the beginning of the dry season, when water levels are getting low and fish are easy to catch. Other areas have two rainy seasons, so the birds have to start breeding while it is raining. Then when the young birds need the most fish, the dry season will be starting.

Each pair of shoebills nests by itself, and they defend a wide territory around the nest. The only time they are noisy is

during courtship displays, where they bow to each other, clatter their bills, and squeal or whine. The male and female both help to build the nest out of water plants. They start by building a floating platform that is up to 10 feet (3 meters) across. On top of this platform, they build a nest that is about 4.5 feet (1.4 meters) across. In some places, nests are built on termite mounds that stick out of the water. The birds work the plant stems into the nest by jumping up and down on them and poking them in with their long toes.

Females lay between one and three dull white eggs. The parents take turns sitting on the eggs. On very hot days, they swallow cool water and regurgitate (re-GER-jih-tate) it, spit it up, on the eggs to keep them cool. When the chicks hatch, the parents care for them by shading them from the sun, cooling them with regurgitated water, protecting them from predators, and catching food for them. When a parent arrives at the nest, the downy chicks beg to be fed by making a little noise and pecking at the adult's legs or bill. The adult then regurgitates some food, and the young birds eat out of the parent's bill.

The young stay in the nest for as long as 105 days. During the first thirty-five days, they cannot stand, and one adult stays with them at all times. After that, both parents leave to hunt for food for the growing chicks. By ninety-five days, the young birds wander off the nest, and they can fly about ten days later.

SHOEBILLS AND PEOPLE

Shoebills appear in wall paintings and hieroglyphics (high-ruh-GLIH-fix), symbol writing, used in ancient Egypt. People told scary stories about shoebills, and the birds were protected because people were afraid to kill them. There is even a myth that people who are fishing will have bad luck if they see a shoebill or mention its name.

Some African countries honor shoebills by putting their pictures on postage stamps. However people also cause problems for shoebills. Farmers raising rice and other crops destroy



When shoebills are fishing, they stand and point their bills straight down so that they can see with both eyes. When they spot prey, they instantly throw their wings forward and their heads downward, and quickly snap up the prey with their bills. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

their habitat, wetlands are drained so people can build on them, and their nesting swamps are sometimes burned to make it easier for people to fish and hunt there. Some people catch the birds and sell them to zoos, and others hunt them for food.

CONSERVATION STATUS

The shoebill is listed as Near Threatened, which means it could become endangered in the near future. The birds are so secretive that scientists have a hard time counting them, but there may be fewer than 15,000 shoebills left in the wild. Although laws protect the shoebill, it is still threatened by people who break the laws. Many local people are working to help the wildlife. By protecting the wild animals, including shoebills, tourists are encouraged to visit their area in order to see the animals. Tourists bring money by staying in hotels, eating at restaurants, buying souvenirs, and signing up for boat tours where they can see animals in the wild.

FOR MORE INFORMATION

Books:

Brown, L. H., Emil K. Urban, and K. Newman. *The Birds of Africa*. Vol. 1, *Ostrich to Falcons*. London: Academic Press, 1982.

Capper, David R., Guy C. L. Dutton, and A. J. Stattersfield, eds. *Threatened Birds of the World*. Barcelona: Lynx Edicions; and Cambridge: BirdLife International, 2000.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 1, *Ostrich to Ducks*. Barcelona: Lynx Edicions, 1992.

Hancock, James A., James A. Kushlan, and M. Philip Kahl. *Storks, Ibises and Spoonbills of the World*. London, San Diego, New York: Academic Press Limited, 1992.

Stuart, Chris and Tilde. *Birds of Africa, From Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.

"Shoebill Stork." *International Wildlife Encyclopedia*, 3rd ed. Vol. 17. Tarrytown, NY: Marshall Cavendish Corporation, 2002.

Periodicals:

"Animals—Habits & Behavior: Shoebill Storks, Tube Worms, Tree Sloth, Colugo, and Sea Robin." *Zoobooks* (November 2002): 1–17.

Freligh, Stephen. "Father of the Shoe." *International Wildlife* (September–October 1985): 14–15.

Tenywa, Gerald. "The Unique Shoebill Under Threat." *Africa News Service* (May 4, 2001).

Web sites:

Steffen, Angie. "*Balaeniceps rex* (Shoebill)." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Balaeniceps_rex.html (accessed on April 28, 2004).

"Shoebill (Balaenicipitidae)." MontereyBay.com. <http://www.montereybay.com/creagrus/shoebill.html> (accessed on April 28, 2004).

"23 Shoebill Balaenicipitidae." BirdTheme.org. <http://www.birdtheme.org/cgi-bin/family.php?famnum=23> (accessed on April 28, 2004).

IBISES AND SPOONBILLS

Threskiornithidae

Class: Aves

Order: Ciconiiformes

Family: Threskiornithidae

Number of species: 32 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Ibises and spoonbills are alike in many ways, but their long bills are very different. The ibises' bills are thin and they curve downward. Spoonbills' spoon-shaped bills are flat and wide at the tip. Both ibises and spoonbills are medium to large wading birds, birds that walk through shallow water in search of food. Most of them have bare faces and throats, they have long necks and legs, and many of them have colorful feathers. They range in length from 19 to 43 inches (48 to 110 centimeters) from the tip of their bills to their tails, and they weigh between 1.5 and 5.5 pounds (0.5 and 2.5 kilograms).

GEOGRAPHIC RANGE

Ibises and spoonbills are spread widely across the world where the temperatures are moderate or warm.

HABITAT

Most ibises and spoonbills live in wetlands or in wooded areas near water, but some can be found in dry grasslands and on mountains. They are also attracted to farms and rice fields.

DIET

Spoonbills and ibises usually use their sensitive bills to hunt by touch in shallow water or mud. They eat mostly small fish, water insects, frogs, shrimp, and other small water animals. Some of them also eat carrion, dead animals, and feed at garbage dumps.

BEHAVIOR AND REPRODUCTION

When spoonbills and ibises fly, they stick their necks and legs straight out. They are sociable birds, and they usually feed and roost in large groups. It is not unusual to find them with other species of wading birds, including storks and herons. Many of them also move around with big flocks and they breed in large groups called colonies. The parents share the work of building the nest, sitting on the eggs, and feeding as many as five chicks.

IBISES AND SPOONBILLS, AND PEOPLE

For 5,000 years, ibises have been honored in the religions of some people, while others thought the birds brought bad luck. Ibises were carved on ancient Greek coins, and in the Middle Ages, noblemen ate ibises as a special treat. In the 1800s, some species of ibises and spoonbills were hunted for their beautiful feathers.

CONSERVATION STATUS

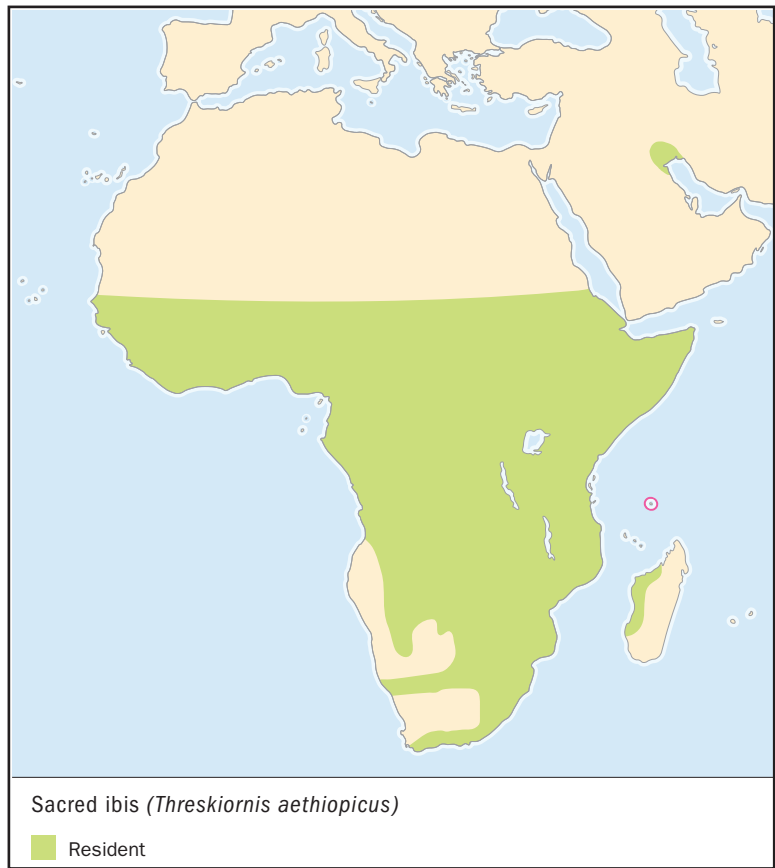
Many spoonbills and ibises are threatened because their wetlands are being drained and taken over by people for building projects and farms. In some countries, people hunt them, and they are still being harmed by dichloro diphenyl trichloroethane, DDT, an insect poison that causes the birds' eggshells to break easily. The reunion flightless ibis became extinct in 1705, and four other species are listed as Critically Endangered, which means they are facing an extremely high risk of extinction in the wild. Two more species are Endangered, facing a very high risk of extinction in the wild, and several more are close to being threatened.



SACRED FIGHTERS

At nesting time, male sacred ibises use their bills for more than finding food. They arrive at the breeding area before the females. Then they fight for the best nesting places with their bills, and fly at other males to try to knock them off their perches. When the females arrive, more fighting and chasing takes place, until they choose mates. Sacred ibises build platform nests of sticks and twigs and line them with soft plants. But sticks are often in short supply, so the birds fight over them and steal them from other nests in the colony. Eventually, they settle down and raise their families.

SPECIES ACCOUNTS



SACRED IBIS *Threskiornis aethiopicus*

Physical characteristics: Sacred ibises are medium-sized wading birds that are covered with white body feathers. The rest of the bird is black, including its bill and the scaly skin on its naked neck, head, and long legs. They also have lace-like black feathers on their backs that cover their tails. Sacred ibises are between 25.5 and 35 inches (65 to 90 centimeters) long from bill tip to tail, and they weigh about 3.3 pounds (1.5 kilograms). Males and females look alike, but the males are a little larger than the females.

Geographic range: Most sacred ibises live in the southern two-thirds of the African continent, south of the Sahara desert, and on the

western side of the island of Madagascar. Large colonies also once lived in the marshes of southern Iraq, but the marshes were drained and many of the birds disappeared.

Habitat: Sacred ibises are found in coastal lagoons, marshes, damp lowlands, and farmlands. They live in both dry and flooded grasslands and along the muddy shores of lakes and rivers. Sometimes they wander into deserts or feed at garbage dumps and in recently burned areas.

Diet: Groups of sacred ibises often feed in shallow pools where they catch little fish, insects, worms, frogs, shrimp, and other small creatures. They can bury their bills up to their eyes as they probe deeply in the mud. They also peck for insects on dry land and follow swarms of grasshoppers and locusts. They sometimes eat seeds and other plant parts, eggs, nestlings, small mammals, carrion, and garbage.

Behavior and reproduction: Sacred ibises have strong wing beats and fly in lines or in V-formations. They can soar high, but they usually fly low over the water. After breeding inland, they often move to coastal areas during the dry season. They are usually quiet birds, but they make grunting and croaking noises during breeding season. They build stick nests and the females lay three or four eggs. Both parents help to raise the young.

Sacred ibises and people: Drawings from ancient Egypt show Thoth, their god of wisdom and knowledge, as a man with the head of a sacred ibis. The Egyptians painted murals and carved statues of ibises, and they even made mummies of the birds. Unfortunately, the sacred ibises died off from habitat loss in Egypt by the beginning of the nineteenth century.

Conservation status: Sacred ibises are not threatened worldwide, but they are no longer able to live in some of the places where they once lived. ■



Sacred ibises can bury their bills up to their eyes as they probe deeply in the mud for small fish, insects, worms, frogs, shrimp, and other small creatures. (Illustration by Brian Cressman. Reproduced by permission.)



ROSEATE SPOONBILL

Ajaia ajaja

Physical characteristics: Roseate spoonbills are one of the most unusual looking wading birds species. They can easily be identified by the bright pink feathers on their wings and legs and their long, flattened bills. They have bare heads and red eyes. Roseate spoonbills are about 31 inches (80 centimeters) long from bill tip to tail, and they weigh about 3.3 pounds (1.5 kilograms).

Geographic range: Roseate spoonbills live in the eastern two-thirds of South America, in Central America, and along both coasts of Mexico. In the United States they breed in Texas, Louisiana, and Florida and they spread out to many places across the country after breeding.

Habitat: Roseate spoonbills usually stay near water, and they prefer to nest on islands. They breed along seacoasts, in estuaries where fresh water and salt water mix, and in mangrove swamps. They also breed inland in freshwater swamps, on islands in rivers and lakes, in marshes, and on wet prairies. They feed in shallow water near their nesting places, and also in canals, ponds, ditches, tidal pools, and wherever else they can find shallow water.

Diet: Small water creatures, including fish, insects, crayfish, and shrimp are the main foods of roseate spoonbills. They usually walk slowly and the swing their bills as they hunt for food. They also dig in the mud or chase after schools of fish.

Behavior and reproduction: Roseate spoonbills usually feed in large groups and roost together at night. At nesting time, they form large colonies and build nests of loosely woven sticks in bushes or trees. The females lay an average of three eggs, and both parents help raise the chicks.

Roseate spoonbills and people: In the 1800s it became popular among some women to use spoonbill wings as fans to cool themselves. Many spoonbills were killed for their feathers. Finally, laws were passed to stop the killing of spoonbills and other wading birds.

Conservation status: Between 1850 to 1920, the population of roseate spoonbills in the United States decreased rapidly until there were only about twenty-five nesting pairs left in the country. Since laws were passed to protect them, the birds are making a good comeback. They are still considered a Species Of Special Concern in the U.S., but they are not listed as endangered anywhere. ■



Roseate spoonbills call with a sound made by clacking the top and bottom of its beak together. (© Lawrence E. Naylor/Photo Researchers, Inc. Reproduced by permission.)

FOR MORE INFORMATION

Books:

Arnosky, Jim. *Watching Water Birds*. Washington, DC: National Geographic, 2002.

Bildstein, Keith L. *White Ibis, Wetland Wanderer*. Washington, DC: Smithsonian Institution Press, 1993.

Eckert, Allan W. *The Wading Birds of North America*. Garden City, NJ: Doubleday & Company, 1981.

Hancock, J. A., J. A. Kushlan, and M. P. Kahl. *Storks, Ibises and Spoonbills of the World*. London: Academic Press, 1992.

Niemeyer, Lucian. *Long-Legged Wading Birds of the North American Wetlands*. Harrisburg, PA: Stackpole Books, 1993.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, 2001.

Stuart, Chris and Tilde. *Birds of Africa, From Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

Berger, Cynthia. "You Don't Need a Knife or a Fork when You're a Spoonbill!" *Ranger Rick* (June 2000): 42-46.

Berger, Joseph. "In City Bustle, Herons, Egrets and Ibises Find a Sanctuary." *The New York Times* (Dec. 4, 2003): B1

"Birds Ask, 'Are We There Yet?'" *Current Science* (November 21, 2003): 14.

Graham, Frank Jr. "Battery Island." *Audubon* (March 2004): 108.

Graham, Frank Jr. "A Wing and a Prayer." (Roseate spoonbills) *Audubon* (July 2001): 87.

Line, Les. "Star Billing." (Roseate spoonbills) *National Wildlife* (April-May 1999).

McNally, Marcia. "Save the Spoonbill." *Earth Island Journal* (Summer 1998): 7.

Regis, Neece. "The Shy Beauty of the Everglades." *Boston Globe* (February 16, 2003): M1.

"Spoonbill Woes." *Birder's World* (April 2003): 16.

Weihs, Daniel and Gadi Katzir. "Bill Sweeping in the Spoonbill." *Animal Behaviour* (March 1994): 649-654.

Web sites:

"Fact Sheets: Roseate Spoonbill." National Zoo. <http://nationalzoo.si.edu/Animals/Birds/Facts/FactSheets/fact-rosespoonbill.cfm> (accessed on May 14, 2004).

“Sacred Ibis.” KenyaBirds.org. <http://www.kenyabirds.org.uk/sacred.htm> (accessed on May 14, 2004).

“Roseate Spoonbill, *Ajaia ajaja*.” U.S. Geological Survey. <http://www.mbr-pwrc.usgs.gov/id/framlst/i1830id.html> (accessed on May 14, 2004).

“Roseate Spoonbill.” Everglades National Park, National Park Service. <http://www.nps.gov/ever/eco/spoonbil.htm> (accessed on May 14, 2004).

“Scarlet Ibis.” National Zoo. http://nationalzoo.si.edu/Animals/Birds/Meet_the_zoos_birds/zoo_bird_info.cfm?bird=Scarlet%20ibis (accessed on May 14, 2004).

Weinstein, Tasha Marie. “The Roseate Spoonbill; At Home in Florida Bay.” Florida Bay Education Project. <http://www.floridabay.org/pub/newspaper/spoonbill.shtml> (accessed on May 14, 2004).

“White Ibis, *Eudocimus albus*.” U.S. Geological Survey. <http://www.mbr-pwrc.usgs.gov/id/framlst/i1840id.html> (accessed on May 14, 2004).

“The White Ibis.” National Audubon Society. http://www.audubon.org/bird/BoA/F37_G1c.html (accessed on May 14, 2004).

FLAMINGOS

Phoenicopteriformes

Class: Aves

Order: Phoenicopteriformes

One family: Phoenicopteridae

Number of species: 5 species

monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

The five species in the Phoenicopteridae family are all flamingos. All five species have oval-shaped bodies with pink or crimson-red feathers covering their bodies. Their black flight feathers can be seen when they spread their wings. Flamingos have exceptionally long legs and necks, and their large bills curve downward in the middle. The upper part of the bill is smaller than the lower part, which is very unusual for birds. Their length from bill tip to tail varies between 31.5 to 63 inches (80 to 160 centimeters), and they weigh between 5.5 to 7.7 pounds (2.5 to 3.5 kilograms). The greater flamingo is about five feet (1.5 meters) tall. The smallest one, the lesser flamingo, is only about 3 feet (0.9 meter) tall.

GEOGRAPHIC RANGE

Most flamingos live in South America and Africa. They also live in the Caribbean, southern Europe, southwest Asia, the Middle East, Pakistan, and India. Flamingos sometimes visit the Florida Keys and other places in southeastern United States.

HABITAT

Flamingos usually breed at large lakes, but they can feed in a large variety of shallow lakes and lagoons, either inland or coastal. The bodies of water can be small and are usually salty (even saltier than ocean water). But some flamingos also feed in fresh water or in rice fields. They find their food

in lakes from sea level all the way up to 14,000-foot (3,500-meter) mountains. The Andean flamingos in South America feed on lakes loaded with natural chemicals (chlorides and sulfates) that other birds avoid. For that reason, the flamingos do not have to compete with other birds for the food in those lakes.

DIET

A flamingo feeds with its head upside down in the water. It sweeps its bill from side to side. The outer edges of both the upper and lower part of its bill are lined with two rows of comblike bristles called lamellae (luh-MEL-ee). As the bird sucks water into its mouth, the lamellae keeps large sea creatures from going in, while letting the foods it eats get through. Flamingos pump the water in and out with their tongues as they swallow their food. The lamellae on the smaller flamingo species are close together, and they keep out everything except algae (AL-jee), diatoms, and other very tiny organisms. The larger flamingo species have fewer lamellae and they eat a more varied diet including insects, snails, and brine shrimp.

BEHAVIOR AND REPRODUCTION

Flamingos fly with their long necks and legs sticking straight out. When they find a good feeding spot, they often gather in enormous flocks. Sometimes the flocks number more than a million birds. Most flamingos do not migrate regularly, but they move when water levels change in their habitats. Everything they do depends on rainfall and drought patterns. When the water level is just right in a lake, hundreds of thousands of flamingos might breed there at the same time. In muddy areas, their nests are towers as tall 16 inches (40 centimeters) made of mud, stones, and shells. In rocky areas, the females lay their eggs right on the ground. Each pair has just one chick that is cared for by both parents. It takes the chicks between sixty-five and ninety days to learn to fly and feed themselves.



WHY DO FLAMINGOS FLOCK?

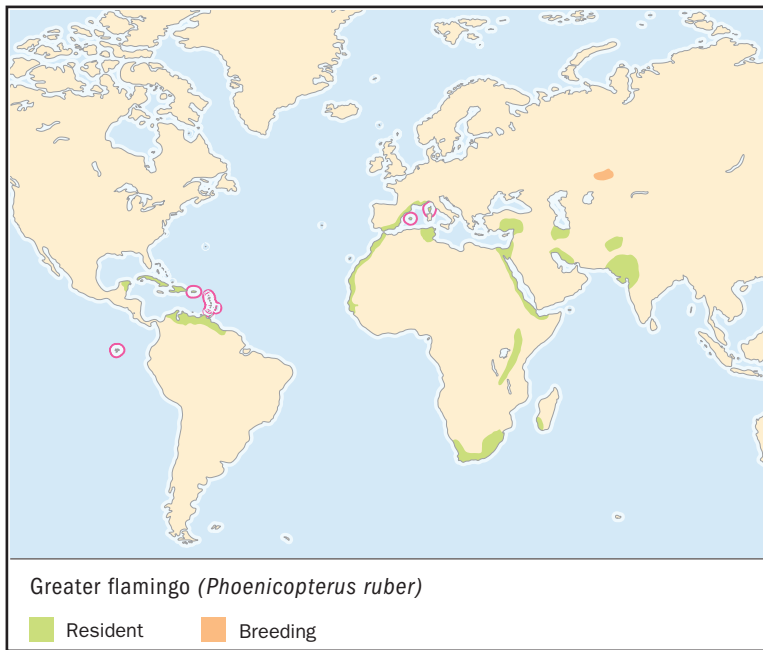
Flamingos gather in enormous flocks for several reasons, the most important being protection from enemies. An eagle has a hard time sneaking up on them with two million eyes on the lookout. When flamingos eat together, they keep the food stirred up and moving around where the birds can easily suck it in. Because they lay their eggs at the same time, they can put their chicks in a big flock with a few adult “babysitters.” Then the rest of the parents can fly off to eat. Flamingos sleep, fly to new places, and do practically everything else at the same time as the other flamingos.

FLAMINGOS AND PEOPLE

Pictures of flamingos appeared on cave drawings 7,000 years ago. People have hunted them and eaten their eggs for thousands of years, but many flamingos live in places that are hard for people to reach, and many others are protected by laws.

CONSERVATION STATUS

Four of the five species of flamingos are in trouble. The Andean flamingo is listed as Vulnerable, facing a high risk of extinction. The James's, Chilean, and lesser flamingos are listed as Near Threatened, not currently threatened, but could become so.



GREATER FLAMINGO

Phoenicopterus ruber

SPECIES ACCOUNT

Physical characteristics: Greater flamingos are the largest species of flamingo. Most greater flamingo adults are white with a little pink in color, but those living in the Caribbean area are rosy red (the color depends on the food they eat). Their flight feathers are black and their bills are pink with a black tip. They are between 47 and 57 inches (1.2 to 1.5 meters) long from bill tip to tail, and they weigh between 4.6 to 9.0 pounds (2.1 to 3.4 kilograms). The males are larger than the females.

Geographic range: Greater flamingos live mostly near the seacoasts and on islands in the Caribbean, Africa, Asia, and Europe. There are some big inland populations in eastern Africa and Pakistan. Greater flamingos sometimes visit the Florida Keys and other places in southeastern United States.

Habitat: Greater flamingos usually breed on islands or along the shores of large lakes, but they can feed in a large variety of shallow lakes and lagoons, either inland or coastal. The bodies of water are

The greater flamingos that breed the farthest north in Europe and Asia migrate south in fall and fly north again in spring. But most of these birds do not migrate. Instead, they move around in huge flocks as the water levels change during rainy and dry seasons. (© Art Wolfe/Photo Researchers, Inc. Reproduced by permission.)



usually salty, but some greater flamingos also feed in fresh water or in rice fields.

Diet: Greater flamingos sweep their heads upside down in shallow water and pump the water in and out of their bills with their tongues. Small water organisms get sucked into their mouths between the comblike bristles in their bills. Their food includes insects, brine shrimp, snails, seeds, algae, and diatoms.

Behavior and reproduction: The greater flamingos that breed the farthest north in Europe and Asia migrate south in fall and fly north again in spring. But most of these birds do not migrate. Instead, they move around in huge flocks as the water levels change during rainy and dry seasons.

If the conditions are not just right at a breeding lake, the flamingos may not breed at all. Or they might all go off and find a new place

to breed. If a breeding site is exceptionally good, the birds may raise two chicks in the same year, one right after the other.

When a pair of greater flamingos builds a mud nest, both help with the job. If they nest on a rocky island, however, the female lays her one egg on the ground. The parents take turns sitting on the egg for about a month. When the chick hatches, they feed it a nourishing red liquid that they make in their throats. The chicks bark like puppies when they want to be fed. Parents know their young by their voices and will feed no other chicks, even when the young are gathered in groups. The parents feed them the red liquid meals for four weeks, and then they start to feed them food that they regurgitate (cough up) from their stomachs. By the age of ten to twelve weeks, the young birds can fly off and feed themselves.

Greater flamingos and people: Thousands of years ago, the Egyptians used greater flamingos as the symbol for “red” in their picture writing. They also called flamingos the living form of Ra, their sun god. Roman emperors ate flamingo tongues as a specialty, while Roman poets wrote that it was a shame to kill such beautiful birds for their tongues. Some people still kill greater flamingos for sport or to eat their meat and eggs, but many of the birds live in protected or hard-to-reach areas. Since the invention of plastic, some people have enjoyed having flocks of pink plastic flamingos on their lawns.

Conservation status: Greater flamingos are not listed as threatened. Their numbers have been going down in the Caribbean area and going up in southwestern Europe. The worldwide population of greater flamingos changes often, depending on the rains and whether or not a year is good for breeding. ■

FOR MORE INFORMATION

Books:

Brown, Leslie H., Emil Urban, and Kenneth Newman. *The Birds of Africa*. Vol. 1, *Ostriches to Birds of Prey*. Princeton, NJ: Academic Press, 1982.

Collar, Nigel J. *Pink Flamingos (Flamingos in East Africa)*. New York: Abbeville Press, Inc., 2000.

“Flamingo.” In *International Wildlife Encyclopedia*, 3rd ed, vol. 6. Tarrytown, NY: Marshall Cavendish Corp, 2002.

McMillan, Bruce. *Wild Flamingos*. Boston: Houghton Mifflin Co., 1997.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, 2001.

Stuart, Chris and Tilde. *Birds of Africa, From Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

Al Jandaly, Bassma. "Flamingo Habitat Set for Clean-Up." *Asia Africa Intelligence Wire* (October 9, 2003).

Boroughs, Don. "Rift Valley Shuffle (Flamingos Moving Around in East Africa)." *International Wildlife* (January 1999).

"Clouds of Flames." *Birder's World*. (October 1999): 38.

"Flamingos' Flight a First (New Zealand's First Colony of Flamingos)." *Geographical* (October 2001): 11.

Geschickter, Jacqueline. "Pink Parade: Nassau, Bahama Islands." *National Geographic* (June 2001): 9.

"Lost Flamingo (Lost in Siberia on Migration)." *Russian Life* (January/February 2004): 10.

O'Connor, Anahad. "Flamingo Paradise is Losing its Luster." *New York Times* (July 23, 2002): F3 (Late Edition, East Coast).

"Pretty in Pink." *New Scientist* (October 11, 2003): 65.

Regis, Neece. "The Shy Beauty of the Everglades." *Boston Globe* (February 16, 2003): M1.

Rudovsky, Shari. "In the Pink." *Natural History* (October 1987): 104-105.

Johnston, A. A. "Greater Flamingo." *BWP Update* 1 (1997): 15-24.

Web sites:

American Bird Conservancy. <http://www.abcbirds.org> (accessed on July 13, 2004).

Cornell Lab of Ornithology. <http://www.birds.cornell.edu> (accessed on July 13, 2004).

Harper, David. "Flamingo Conservation in Kenya." University of Leicester, United Kingdom. <http://www.deh.gov.au/discussion-groups/apmw/msg00199.html> (accessed on May 8, 2004).

Miller, David. "Flamingo Conservation in the Yucatan." National Aviary, Pittsburgh. <http://www.aviary.org/csr/v/flamingo%20conservation.php> (accessed on May 8, 2004).

"Scientists Corral, Band and Release Over 300 Threatened Flamingoes for Research." International Society for Salt Lake Research. <http://www.isslr.org/news/newsone.asp?qnewsid=235> (accessed on May 9, 2004).

Wetlands International. <http://www.wetlands.org> (accessed on July 13, 2004).

order

CHAPTER

DIURNAL BIRDS OF PREY Falconiformes

Class: Aves

Order: Falconiformes

Number of families: 3 families

PHYSICAL CHARACTERISTICS

The birds in the order Falconiformes are called raptors (RAP-ters), or birds of prey, meaning they hunt animals for food. The raptors in the order Falconiformes include hawks, eagles, Old World vultures (from Africa, Asia, and Europe), falcons, and secretary birds. These raptors hunt during the day, and have beaks and feet that are made for hunting. Their beaks have sharp hooks that can tear meat. Their legs are generally short, and their feet have long, curved claws called talons (TAL-unz) that can grab and kill prey. These raptors have excellent eyesight, and can see about eight times better than humans.

Most of the birds in the Order Falconiformes have compact bodies, rounded heads, and short necks. Their sizes range from tiny falconets that weigh just over a pound (28 grams) to griffon vultures that can weigh as much as 26 pounds (12 kilograms). The secretary bird has the longest legs and stands 4 feet (1.2 meters) tall. Female raptors are usually larger than the males.

Raptors' feathers are mostly gray, brown, or black. Some have tan or white chests, often with brown spots or streaks. These colors help camouflage the birds as they sneak up on prey. Many of them have bristles (stiff feathers) around their beaks that may protect their eyes while feeding or help them feel the prey they have caught. Most raptors have large flight feathers and are excellent fliers.

GEOGRAPHIC RANGE

Falconiformes live on every continent except Antarctica.

phylum

class

subclass

● **order**

monotypic order

suborder

family

HABITAT

Most raptors are land birds, although some of them snatch fish from lakes or oceans. They live in every kind of land habitat, including the tundra of the far north, forests, grasslands, wetlands, deserts, mountains, farmlands, seacoasts, and even large cities.

DIET

Except for vultures, raptors kill the animals they eat. Most raptors are not fussy—they will eat any animal they can catch. These animals include mammals, birds, fish, reptiles, insects, frogs, crabs, and snails. Some also eat eggs and garbage, and vultures eat carrion (dead animals). A few of the birds have special diets and eat only one or two kinds of prey.

Each type of raptor has a special way of hunting. A falcon usually catches its prey on the wing. It grabs the prey in midair with its talons and kills it with a bite to the neck. A small hawk usually sits on a perch and makes short flights to catch a mouse or other prey on the ground. The hawk squeezes it to death with its strong feet. Then it takes the prey to a perch to pluck it before eating it. Larger hawks and eagles hunt by riding high on warm air currents, and they have to wait until the air warms up each morning before flying off.

Some of the birds in the Falconiformes group have unusual ways of hunting. Kestrels are little falcons that hover in open areas, hunting for insects or small mammals. Secretary birds are in a family by themselves, and they are quite different from hawks and falcons. They are big birds with long legs and they usually run after their prey. When they catch it, they kick it to death.

BEHAVIOR AND REPRODUCTION

Raptors have simple calls that are often high-pitched and may sound something like “keer-keer.” Pairs often call to each other to say, “I’m here—where are you?” At migration time, huge flocks of raptors journey north and south together. Hawks that breed in northern areas make up the biggest flocks, but some falcons also make long migration trips.

Most raptor pairs live by themselves. They have to protect large territories in order to find enough food. But some of the Old World vultures and smaller falcons nest and feed together. Most falcons make simple nests on the ground, but some hawks and eagles build large nesting platforms that can be several feet high. Usually, the males hunt for food while the females sit on

the nest. The chicks of the largest raptors stay in the nest for several months after hatching. Most of the larger raptors raise only one chick a year, and some do not breed every year.

FALCONIFORMES AND PEOPLE

From prehistoric times, birds of prey have been a part of people's lives. Many people admire the birds, and some even worshiped them as part of their religion. But others are afraid of them or think they are bad because they kill other animals. Pictures of raptors are used to symbolize power, freedom, strength, and speed. The bald eagle is the national bird of the United States, and birds of prey appear on flags, coins, and shields in many countries.

Many farmers appreciate the way raptors kill mice and other animals that eat the grain in their fields. But other people blame the birds for killing farm animals, pets, and racing pigeons. Usually the damage done by the birds is not nearly as great as some people think it is. In the United States and many other countries, it is illegal to kill these raptors, but some people do it anyway.

In some parts of the world, people participate in a sport called falconry. Falconers are hunters who train falcons and hawks to catch pheasants, rabbits, and other wild game animals for their trainers. The birds are rewarded with a treat, but they do not eat the animals they kill.

Raptors usually fly long distances by riding on rising bubbles of warm air called thermals. They find the thermals above land, so they do not fly long distances over water. At migration time, bird watchers gather at places such as Panama where the land narrows. Thousands of hawks may pass over the area every hour for weeks.

Some raptors are able to live in cities because they can find conditions similar to wild habitats. For example, peregrine (PER-uh-grun) falcons nest on cliffs in the wild. Now they have discovered that window ledges on skyscrapers make great nesting places too. There are plenty of pigeons and songbirds for



AT THE TOP

Raptors are the top predators in many habitats. That means that nothing eats them. It may sound like an easy life, but raptors have to be skillful fliers in order to catch a mouse zipping along the ground or a bird flying past them. When a bald eagle spots a fish swimming below, it has to drop through the air at just the right speed and judge where the fish will be when it hits the water. If all goes well, the eagle will lock the slippery fish in its talons and swoop up. But raptors are not always that lucky. The prey animals often get away and the raptor has to keep hunting.

the peregrines to catch on the wing. And people are thrilled to look out the window of a tall office building and see a falcon zooming past.

CONSERVATION STATUS

Of the approximately 300 species in the Falconiformes order, thirteen are listed as Critically Endangered, facing an extremely high risk of extinction, or Endangered, facing a very high risk of extinction. Another fifty-five are listed as Vulnerable, facing a high risk of extinction, or Near Threatened, close to becoming threatened with extinction. One reason so many are in trouble is that a lot of habitats have changed from forests and grasslands to farms and cities. When that happens, the prey animals that live in the habitats often disappear—the raptors that lived there cannot find the food they need, so they often move away or die off.

When raptors can no longer live in an area, this indicates that an environment may no longer be healthy for the all of the wildlife and humans living there. For example, if some poisonous chemicals get into a lake, they get passed along from little fish to bigger fish, as the fish eat one another. When an eagle eats a large fish from the lake, it takes in all of the poison passed along to the fish. In the 1950s and 1960s, bald eagles in the United States were laying eggs with such thin shells that they broke before hatching. It took some detective work by scientists to discover that the birds were being harmed by an insect poison called DDT. The poison was being passed along to the birds from the animals they ate, and these poisons were making the eggshells thin. DDT is now banned in the U.S. and the eagles are making a comeback. But it is still being used in many other countries, and conservationists are working hard to change that.

FOR MORE INFORMATION

Books:

Bailey, Jill. *Birds of Prey*. New York: Facts on File, 1988.

Clark, William S. *Hawks of North America*. Boston: Houghton Mifflin, 2001.

del Hoyo, Josep, A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 2, *New World Vultures to Guinea-fowl*. Barcelona: Lynx Edicions, 1994.

Jones, David. *Eagles*. Vancouver, Canada: Whitecap Books, 1996.

Parry-Jones, Jemima. *Eyewitness: Eagle & Birds of Prey*. London and New York: DK Dorling Kindersley, 2000.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Petty, Kate. *Birds of Prey*. New York: Gloucester Press, 1987.

Weidensaul, Scott. *The Raptor Almanac*. New York: The Lyons Press, 2000.

Periodicals:

Conover, Adele. "To Save a Falcon." *Smithsonian* (February 1999): 102–112.

"Eagles." *Zoobooks* (October 2002): 1–17.

Lohmus, A. "Are Certain Habitats Better Every Year? A Review and Case Study of Birds of Prey." *Ecography* (October 2003): 545–552.

White, Mel. "Raptor Central." *National Geographic Traveler* (May/June 2001): 6.

Web sites:

American Bird Conservancy. <http://www.abcbirds.org> (accessed on July 13, 2004).

Cornell Lab of Ornithology. <http://www.birds.cornell.edu> (accessed on July 13, 2004).

The Peregrine Fund. World Center for Birds of Prey. <http://www.peregrinefund.org> (accessed on July 13, 2004).

Raptor Research Foundation. <http://biology.boisestate.edu/raptor> (accessed on July 13, 2004).

HAWKS AND EAGLES

Accipitridae

Class: Aves

Order: Falconiformes

Family: Accipitridae

Number of species: 236 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

This large family includes raptors (RAP-ters), birds of prey, of many shapes and sizes. One of the smallest species is the South American pearl kite that weighs less than 3.5 ounces (100 grams). At the other end is the Himalayan vulture weighing 26 pounds (12.5 kilograms). Raptors have keen eyesight and strong flight feathers.

Most of these raptors hunt during the day, and they kill the animals they eat. They can grab and kill prey with their curved talons (TAL-unz), claws, and tear meat with their hooked beaks. The Old World vultures from Europe, Asia, and Africa are the exception—they have weaker feet than the other birds in this family, and most of them are not able to kill the animals they eat.

Male and female raptors usually look alike, but the females are larger than the males. The birds' feathers are mostly gray, brown, or black, and some have lighter-colored chests, often with brown spots or streaks.

GEOGRAPHIC RANGE

Hawks and eagles are found on all continents except Antarctica.

HABITAT

Sea eagles catch fish along coasts, but most raptors are land birds. They live in every kind of land habitat, including the tundra of the Far North, forests, wetlands, deserts, grasslands,

mountains, and farmlands. They can also live in towns and cities with parks.

DIET

All hawks and eagles are carnivorous, meat eaters, and, except for vultures, they eat only freshly caught prey. Most of them eat any animal they can catch, but some have very special diets. For example, crab hawks eat crabs found in mangrove forests, snail kites eat snails, and ospreys eat fish.

BEHAVIOR AND REPRODUCTION

The hawks with short wings and long tails are good at flying among the trees. Those with long, broad wings and broad tails are soaring birds that ride the air current to great heights. Some hawks, especially those that breed in cool climates, migrate long distances in fall and spring. Others live year round in their breeding areas.

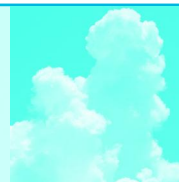
Most raptors defend a breeding territory from other birds of their species, and they usually build their nests out of sticks. Large hawks and eagles lay one or two eggs, and the smaller species lay three or more. After the chicks can fly, they depend on their parents for several more weeks while they gradually learn to hunt.

HAWKS, EAGLES, AND PEOPLE

Thousands of years ago, hawks and eagles were admired for their hunting skills and were even thought of as messengers of the gods. As early as 4,000 years ago, captive hawks were used as hunters to catch rabbits and other animals for their trainers. In modern times, some people kill hawks that are suspected of harming farm animals, but many other people enjoy watching them in their local habitats and on their long migrations.

CONSERVATION STATUS

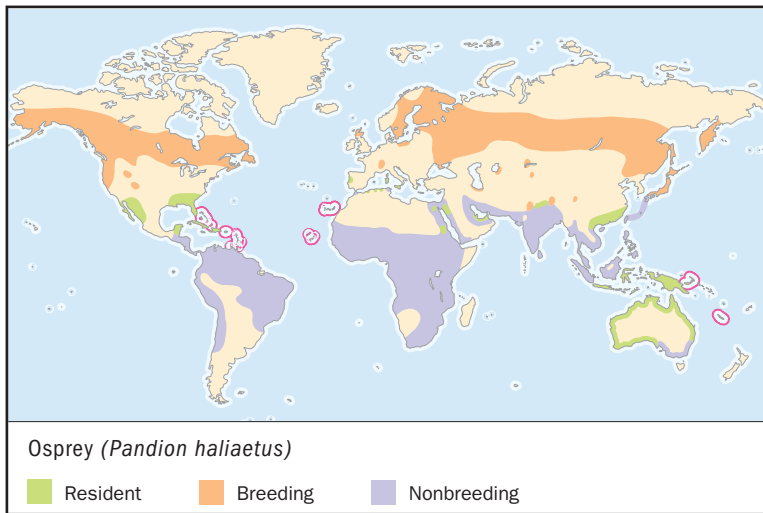
Of the 236 species of Accipitridae, nine are listed as Critically Endangered, facing an extremely high risk of extinction in the wild, and four as Endangered, facing a very high risk of extinction in the wild. Another forty-five are listed as Vulnerable,



SKY WOLVES

Groups of birds are usually called flocks, but Harris's hawks act more like a pack of wolves. As many as six hawks fly in a line. When the one in front spots prey, it swoops to kill it. If the prey gets away, the next one in line swoops down. They take turns until the prey is tired and easily caught. Then they all eat together. Sometimes the birds attack their prey from different directions all at once. If the prey escapes under a bush, one hawk will crawl in and scare it out so the others can catch it. Together, the "pack" can catch a jackrabbit that weighs twice as much as a Harris's hawk.

facing a high risk of extinction in the wild, or Near Threatened, close to being threatened with extinction. Habitat loss is the main reason these birds are in trouble. In many countries, hawks and eagles are protected by law, and conservationists are doing what they can to preserve the habitats that these birds need.



OSPREY

Pandion haliaetus

SPECIES ACCOUNTS

Physical characteristics: Ospreys are medium-sized hawks, about 22 inches (56 centimeters) long from bill tip to tail. Their feathers are mostly black on the back and white on the front with a speckled “bib.” Ospreys have sharply-hooked beaks and very strong feet with sharp talons that are good for grabbing slippery fish. The outer toe on each foot can be swung backward for an even stronger grip.

Geographic range: Ospreys that breed farthest north in Alaska, Canada, and northern Europe and Asia migrate to South America, Africa, and India for the winter. Ospreys live year round in Australia, the southern United States, and eastern China.

Habitat: Ospreys live near water of all kinds, both inland and near the ocean, including marshes, lakes, reservoirs, bays, seashores, rivers and estuaries, where salt water and fresh water mix.

Diet: Ospreys are sometimes called fish hawks because fish is about all they eat. They glide over shallow water and dive down feet first to grab fish with their sharp talons. By holding heavy fish with both feet, ospreys can carry them to land. Using their sharp beaks, ospreys tear the fish into bite-sized pieces.

Ospreys are sometimes called fish hawks because fish is about all they eat. They glide over shallow water and dive down feet first to grab fish with their sharp talons. (Illustration by Barbara Duperron. Reproduced by permission.)



Behavior and reproduction: Ospreys often build stick nests in trees near water. But they also nest on the ground on small islands and on sea cliffs. Females usually lay three eggs. Males bring fish to the females while they stay on the nest. Females keep the eggs warm and shelters the chicks from cold winds and the sun's hot rays. After the young birds can fly, they stay with their parents for a while. If their parents migrate, the young birds will fly south with them.

Ospreys and people: Biologists build nesting platforms on tall poles in the water for the ospreys. The birds like to nest on the platforms, because they are safe from raccoons and other mammals that steal their eggs.

Conservation status: Ospreys are not threatened. ■



HARRIS'S HAWK

Parabuteo unicinctus

Physical characteristics: Harris's hawks have mostly dark brown feathers, but their shoulders are red-brown and their tail feathers are black with white tips. Their length is between 19 and 22 inches (48 to 56 centimeters) from the bill tip to tail.

Geographic range: Harris's hawks live in southwestern United States, Mexico, Central America, and South America.

Habitat: As long as there is water nearby, Harris's hawks can live in desert areas. Some of the birds live in grasslands and a few use

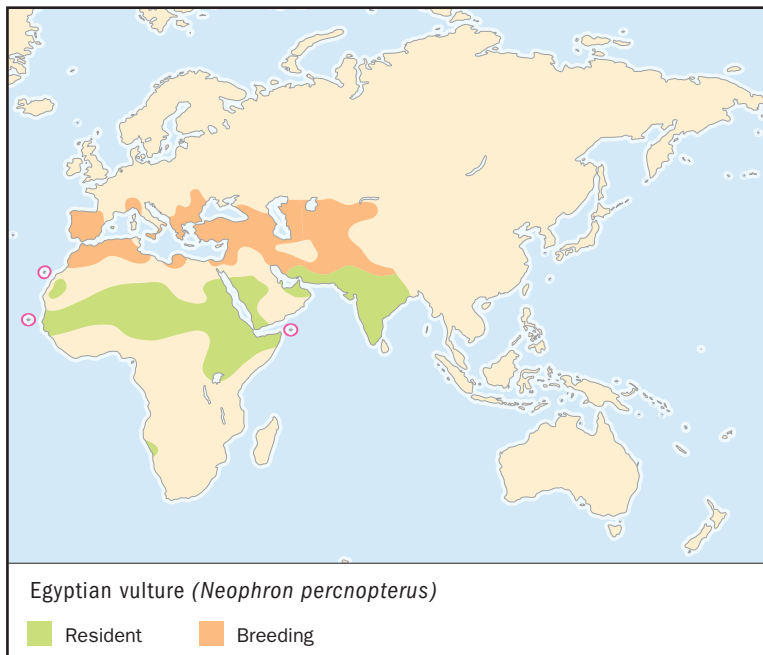
wetlands. They also need an area where there are a few trees, tall saguaro cacti (KACK-tie, or KACK-tee), or electrical transmission towers where they can build nests.

Diet: Harris's hawks eat mostly hares, rabbits, birds, and lizards. They can kill prey that is large for their size because they hunt in groups of two to six hawks.

Behavior and reproduction: Harris's hawks are more sociable than most hawks. They build stick nests and line them with moss, grass, and leaves. Females lay between one and four eggs. Males bring food to the females and help defend the nest, and occasionally males will sit on the eggs. In desert areas, females must shade the eggs and chicks from heat. Often other Harris's hawks, usually young birds that are not breeding, help to feed the chicks and guard the nest. Some pairs raise two families in the same year. Often the young of the first nest help to raise the second set of chicks.

Harris's hawks and people: Biologists and bird lovers are fascinated by Harris's hawks. Because the hawks are so sociable, they behave in ways that are unusual for birds and interesting to study.

Conservation status: Harris's hawks are not threatened. ■



EGYPTIAN VULTURE

Neophron percnopterus

Physical characteristics: At about 4 pounds (1.8 kilograms), the Egyptian vulture is one of the smaller Old World vultures. Their length is about 25 inches (63.5 centimeters) from bill tip to tail. They have bright yellow skin on their faces and a “mane” of white feathers on their heads. The rest of their feathers are also white, except for black flight feathers.

Geographic range: Egyptian vultures live in Africa and India year round. The birds that breed in northern Africa, Europe, and Asia, north of India, migrate to warmer areas after breeding.

Habitat: Egyptian vultures like dry, wide-open lands, including deserts, grasslands, farm fields, and pastures. They also live in cities, where people welcome them as a clean-up crew.

Diet: Like all vultures, Egyptian vultures are scavengers, eating mostly carrion, dead animals. They also eat garbage, insects, eggs, and occasionally live prey. They are famous for their ability to break open

Egyptian vultures build big, messy stick nests on rocky ledges or in caves. Where there are no rocks, they build their nests in trees. (Illustration by Barbara Duperron. Reproduced by permission.)



thick ostrich eggs by throwing stones at them. Very few birds know how to use tools that way.

Behavior and reproduction: Egyptian vultures usually build big, messy stick nests on rocky ledges or in caves. Where there are no rocks, they build their nests in trees. They usually lay two eggs, and, unlike most raptors, the parents regurgitate, bring up from the stomach, food to feed the chicks.

Egyptian vultures and people: An Egyptian pharaoh once made a law that anyone who killed an Egyptian vulture would be put to death. He thought the job these birds did to clean up people's waste was very important. People still value the bird for that reason. More than a century ago, the bile from Egyptian vultures' livers was made into a medicine and their skins were tanned to make leather.

Conservation status: Egyptian vultures are not threatened. ■

FOR MORE INFORMATION

Books:

Bailey, Jill. *Birds of Prey*. New York: Facts on File, 1988.

Brown, Leslie H., Emil Urban, and Kenneth Newman. *The Birds of Africa*. Vol. 1, *Ostriches to Birds of Prey*. Princeton: Academic Press, 1982.

Burton, Philip, and Trevor Boyer. *American Nature Guides, Birds of Prey*. New York: Gallery Books, 1991.

Burton, Philip, and Trevor Boyer. *Birds of Prey*. New York: Gallery Books, 1989.

Clark, William S. *Hawks of North America*. Boston: Houghton Mifflin, 2001.

Dewitt, Lynda. *Eagles, Hawks, and Other Birds of Prey*. New York: Franklin Watts, 1989.

Erlich, Paul R., David S. Dobkin, and Darryl Wheye. *The Birder's Handbook*. New York: Simon & Schuster, 1988.

Jones, David. *Eagles*. Vancouver, Canada: Whitecap Books, 1996.

Laubach, Christyna, Rene Laubach, and Charles W. G. Smith. *Raptor! A Kid's Guide to Birds of Prey*. North Adams, MA: Storey Books, 2003.

Miller, Sara Swan. *Birds of Prey: from Falcons to Vultures*. New York: Franklin Watts, Inc., 2001.

Parry-Jones, Jemima. *Eyewitness: Eagle & Birds of Prey*. London and New York: DK Dorling Kindersley, 2000.

Patent, Dorothy Hinshaw. *The Bald Eagle Returns*. New York: Clarion Books, 2000.

Petty, Kate. *Birds of Prey*. New York: Gloucester Press, 1987.

Stone, Lynn M. *Vultures*. Minneapolis, MN: 1993.

Tarboton, Warwick. *African Birds of Prey*. Ithaca, NY: Cornell University Press, 1989.

Turner, Ann Warren. *Vultures*. New York: David McKay Company, Inc., 1973.

Weidensaul, Scott. *The Raptor Almanac*. New York: The Lyons Press, 2000.

Wilbur, Sanford R. and Jerome Jackson. *Vulture Biology and Management*. Berkeley, Los Angeles, and London: University of California Press, 1983.

Periodicals:

Berger, Cynthia. "Bright Lights, Bird City." *National Wildlife* (April/May 2001): 30–37.

Burns, Michael K. "Hawk Mountain's Lofty Mission." *Baltimore Sun* (November 19, 2001): 2A.

"Dressed for Dinner." *National Geographic World* (November 2001): 2.

"Eagles." *Zoobooks* (October 2002): 1–17.

Eliot, John L. "A Boost for Imperial Wings." *National Geographic* (March 2003): 2.

Hartz, Cheryl. "Wolves of the Sky." *Ranger Rick* (June 1997): 4–9.

Miller, Claire. "It's Great to be Gross." *Ranger Rick* (October 2001): 14–19.

Miller, Claire. "Ospreys-Fantastic Fliers." *Ranger Rick* (March 2000): 32–37.

Relo, Mariana. "Bald Eagles Are Back." *SuperScience* (April 2003): 12–14.

"Saving Wildlife and Wild Places: Helping Eagles." *National Wildlife* (February/March 2004): 66.

Walker, Melissa. "One Morning in Our Alaskan Rainforest." *Wilderness* (Winter 2003/2004): 53–54.

Wexo, John Bonnett. "Birds of Prey." *Zoobooks* (February 2001): 1–18.

White, Mel. "Raptor Central." *National Geographic Traveler* (May/June 2001): 6.

Williams, Ted. "Zapped!" *Audubon* (January/February 2000): 32–40.

Web sites:

"All About Eagles." American Eagle Foundation. <http://www.eagles.org/all.html> (accessed on May 27, 2004).

"Animal Bytes: Old World Vultures." Sea World. <http://www.seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordates/craniata/aves/falconiformes/vultures.htm> (accessed on May 27, 2004).

"Bald Eagle Satellite Telemetry." The Santa Cruz Predatory Bird Research Group. <http://www2.ucsc.edu/scpbgr/research.htm> (accessed on May 27, 2004).

"Explore Birds of Prey." The Peregrine Fund. http://www.peregrinefund.org/Explore_Raptors/index.html (accessed on May 27, 2004).

The Hawk and Owl Trust. <http://www.hawkandowl.org> (accessed on July 13, 2004).

"Hawk Watch Sites." Hawk Migration Association of North America. <http://www.hmana.org/watches.php?PHPSESSID=6c88dd9d36dd435c5bfcdec8c921afa8> (accessed on May 27, 2004).

HawkWatch International. <http://www.hawkwatch.org> (accessed on July 13, 2004).

Raptor Research Foundation. <http://biology.boisestate.edu/raptor> (accessed on July 13, 2004).

"USGS Raptor Information System" USGS Forest and Rangeland Ecosystem Science Center, Snake River Field Station. <http://ris.wr.usgs.gov> (accessed on May 27, 2004).

World Center for Birds of Prey. The Peregrine Fund. <http://www.peregrinefund.org> (accessed on July 13, 2004).

family CHAPTER

SECRETARY BIRD

Sagittariidae

Class: Aves

Order: Falconiformes

Family: Sagittariidae

One species: Secretary bird
(*Sagittarius
serpentarius*)

PHYSICAL CHARACTERISTICS

A secretary bird's long legs resemble those of a stork, yet it has the head and body of a bird of prey. Some people call it a "marching eagle," even though it is not an eagle. It is the only bird in its family, because there are no other birds similar enough to it. It is 4 feet (1.2 meters) tall, making it the tallest bird of prey. It has strong, thick claws that are used to kill prey and a hooked, pale gray beak. The large areas of bare skin on its face are orange.

A secretary bird's head, neck, and body feathers are mostly light gray or white. It does, however, have a crest of droopy black feathers that it can raise when it is excited. The bird has black flight feathers and black feathers covering the top half of its legs. The bird's tail feathers are black and white and the two middle tail feathers are twice as long as the others.

The male and female secretary birds look alike. The sizes of the birds in a pair may vary, the male being bigger at times, the female bigger at other times. The length from their beaks to the end of their long tails ranges from 49 to 59 inches (1.2 to 1.5 meters). They weigh between 7.5 and 9.5 pounds (3.4 and 4.3 kilograms).

GEOGRAPHIC RANGE

They live south of the Sahara Desert in Africa, except for the heavily wooded areas in western Africa.

phylum

class

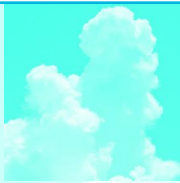
subclass

order

monotypic order

suborder

▲ **family**



MYSTERY NAME

Depending on which book or website you read, you will find different origins of the secretary bird's strange name. Some say the bird got its name from its crest, which looks like the quill pens that old-time secretaries kept handy in their hair. The secretaries could pull out a quill whenever it was time to write something. Another theory is that the name comes from the Arabic words *saqu ettair*, meaning hunter bird. Others say the bird was named for its croak, which sounds a little something like its name.

HABITAT

Secretary birds live wherever there are plenty of prey animals available in a variety of grasslands and farmlands. They may enter deserts after a heavy rain, and they sometimes go to clearings in forests. They roost and nest in low trees growing in the grasslands. They cannot live in heavy forests, because it is difficult for them to fly among the trees.

DIET

Secretary birds usually do not fly as they hunt for prey. They often walk along in the tall grass, trying to frighten little animals out of hiding, to then stomp or kick the animals to death. The creatures they kill this way can be moths, grasshoppers, other large insects, and mammals as small as mice or as big as hares and mongooses. Lizards and game birds are also a part of their diet. When they find small insects and eggs, they snatch them with

their beaks. The exact diet of secretary birds depends on where they live; locusts and rodents are mostly found in one region, while beetles and lizards are plentiful in another area. When secretary birds see flames, they run toward the fire. They do this because they know that hundreds of small prey animals flee for their lives ahead of the fires, creating a source of food. If the fire comes too close, the secretary birds can always fly off.

Secretary birds stoop to pick up their prey only after it has stopped moving, and when they can, they swallow it whole. Once in a while, they tear the biggest prey to pieces and store it under a bush to eat it later.

Secretary birds are most famous for their ability to kill snakes, even poisonous ones, although snakes are only a small part of their diet. Their long legs are covered with scales that protect them from snakebites. The birds can also shield themselves from bites with their wing feathers. Sometimes they run quickly after snakes to catch them. They kill snakes the same way they kill other animals, by pouncing on them and kicking them, then striking the back of the snake's head with a talon for the killing blow. When swallowed whole, snakes usually take a longer time to go down than most prey, because the birds slowly suck them in.



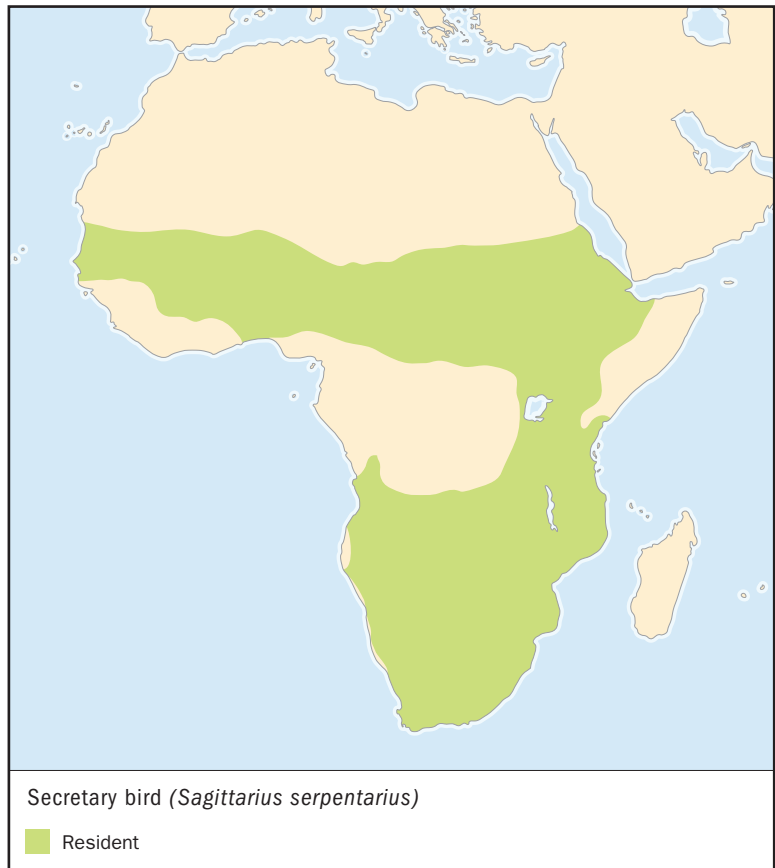
Secretary bird pairs build nests together. They stomp around on top of a tree or bush until it is flat, and then bring twigs and sticks to make a platform. They line the platform with a bed of dry grass to make a soft place for the eggs and chicks. (© Renee Lynn/Photo Researchers, Inc. Reproduced by permission.)

Because secretary birds swallow most of their prey whole, they have to get rid of the bones, fur, feathers, and scales that they cannot digest. They regurgitate (cough up) these unwanted parts in large pellets. The sausage-shaped pellets can be as long as 4 inches (10 centimeters).

BEHAVIOR AND REPRODUCTION

Secretary birds can fly well, but they usually prefer to run unless they need to fly to escape danger. When they are looking for a mate, they also do some high-flying acrobatics as part of their courtship displays. They fly high, dive down, and swoop up again. They also dash along the ground with their wings held above their backs, zig-zagging through the tall grass while making croaking noises.

Once secretary birds have found a mate, they usually stay together for life. They defend a large territory where they hunt for food. These territories are between 7.7 to 193 square miles (20 to 500 square kilometers), depending on how plentiful the food is. Male and female secretary birds usually stay within sight of each other on their territory. Sometimes they hunt alone, but then they call to each other to keep in touch. When they are done hunting in an area, they may rest or ride high in the sky on thermals (rising bubbles of warm air). They soar on broad wings to their nest, to water, or to other hunting areas. If they discover other secretary birds in their territory, they



chase and kick the other birds, making loud, croaking noises. At sunset, they usually return to their roost site. Unlike most birds, secretary birds sleep in their nests year round, not just when they raise their young. The nest is big enough for both of them to lie down in at night, and they may use the same nest and add to it year after year.

Before secretary birds build a nest, the pair finds a tree or bush with a flat top. They prefer acacia (uh-KAY-shah) trees for their nest. They stomp around on top of the tree or bush until it is flat. Then they bring twigs and sticks to make a platform as big as 6.6 feet (2 meters) in diameter. They line it with a bed of dry grass to make a soft place for the eggs and chicks. When the time is right to raise a family, the female lays between one and three eggs. The parents take turns sitting on the eggs, which hatch in forty-two to forty-six days. At first, the parents dribble partially digested food and some water into their

chicks' beaks, and then tear up the food that they feed the chicks. Soon, the chicks can handle larger prey because they have big heads for their size. At just a few weeks of age, they can open their mouths so wide that they can gulp down snakes and other prey whole. The legs of young secretary birds grow so fast that the scales keep popping off and being replaced by new scales. They are not able to stand until they are ready to fly, which can be anywhere from 65 to 106 days. Their rate of growth depends on how much food their parents are able to catch for them.

Secretary birds usually breed during the summer rains, because plenty of food is available. They can nest at any time of the year, but it is also dependent on food availability. In fact, they may raise three sets of chicks in one year and none in the next, depending on the supply of prey. Pairs of secretary birds will move away from their territories and find a new place to live if food continues to be scarce.

SECRETARY BIRDS AND PEOPLE

Scientists study the pellets of secretary birds. The bones and feathers in the pellets give them an easy way to find out what the birds have been eating. The birds are valuable to farmers because they eat insects and rodents that might otherwise eat grain. Bird watchers in Africa enjoy seeing these long-legged raptors that are famous for killing snakes.

CONSERVATION STATUS

Secretary birds are not threatened, and they are protected by laws in most African countries, although some people hunt them illegally.

FOR MORE INFORMATION

Books:

Bailey, Jill. *Birds of Prey*. New York, NY: Facts on File, 1988.

Burton, Maurice and Robert Burton. *International Wildlife Encyclopedia*, 3rd ed. Vol. 17. Tarrytown, NY: Marshall Cavendish Corporation, 2002.

Burton, Philip, and Trevor Boyer. *Birds of Prey*. New York: Gallery Books, 1989.

Parry-Jones, Jemima. *Eyewitness: Eagle & Birds of Prey*. London and New York: Dorling Kindersley, 2000.

- Petty, Kate. *Birds of Prey*. New York: Gloucester Press, 1987.
- Reid, Struan. *Bird World*. Brookfield, CN: The Millbrook Press, 1991.
- Stuart, Chris and Tilde. *Birds of Africa, From Seabirds to Seed-Eaters*. Cambridge, MA: The MIT Press, 1999.
- van Perlo, Ber. *Birds of Southern Africa*. Princeton, NJ: Princeton University Press, 2001.
- Weidensaul, Scott. *The Raptor Almanac*. New York: The Lyons Press, 2000.

Periodicals:

- "Birds of Africa (The Secretary Bird)." *Scienceland* (Spring 1997): 24–25.
- Holtzen, Ellen. "The Fire Bird." *Ranger Rick* (November 1984): 46–47.
- Kemp, M. I., and A. C. Kemp. "Bucorvus and Sagittarius: Two Modes of Terrestrial Predation." *Proceedings Symposium on African Predatory Birds*, ed. Alan Kemp. Northern Transvaal Ornithological Society, Pretoria. (1977).

Web sites:

- "Secretary Bird." The Big Zoo. http://www.thebigzoo.com/Animals/Secretary_Bird.asp (accessed May 17, 2004).
- "Secretary Bird." The Hawk Conservancy Trust. <http://www.hawk-conservancy.org/priors/secretary.shtml> (accessed May 17, 2004).
- "Secretary Bird." Indiana University. <http://www.cogsci.indiana.edu/farg/harry/bio/zoo/secrtary.htm> (accessed May 17, 2004).
- "Secretary Bird." Kenya Birds. <http://www.kenyabirds.org.uk/secretary.htm> (accessed May 17, 2004).
- Raptor Conservation Group, Endangered Wildlife Trust. <http://www.ewt.org.za>

family CHAPTER

FALCONS AND CARACARAS

Falconidae

Class: Aves

Order: Falconiformes

Family: Falconidae

Number of species: 62 species

PHYSICAL CHARACTERISTICS

The birds in the falcon family are small to medium raptors (birds of prey). They include peregrines (PER-uh-grunz), falconets, gyrfalcons (JERR-fal-kunz), merlins, kestrels, hobbies, and caracaras. They range in size from 5.5 to 25.6 inches (14 to 65 centimeters) from their beaks to the end of their tails. Like other raptors, falcons have sharp talons (claws) and hooked beaks, excellent eyesight, and pointed wings. Most falcons have feathers in shades of brown, black, white, and gray with some streaks or spots.

GEOGRAPHIC RANGE

Falcons and caracaras live on every continent except Antarctica. They also live on many ocean islands.

HABITAT

Birds in the falcon family live in almost every kind of land habitat. Many of the falcons that live in northern areas migrate to places where there is a better supply of food in winter.

DIET

Falcons are carnivores (meat-eaters), and all but the caracaras feed on live animals. Some hunt other birds in the air and others grab animals on the ground. Kestrels hover above the ground, and many other falcons swoop down from perches. Although some falcons occasionally hunt in pairs, most of them hunt alone. They eat mostly birds, mammals, reptiles, and insects, and caracaras also eat carrion, including dead fish.

phylum

class

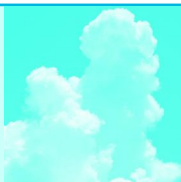
subclass

order

monotypic order

suborder

▲ family



HAWK OR FALCON?

Birds in the hawk family and in the falcon family have many things in common, including the sharp talons and hooked beaks that all raptors have. Both hawks and falcons catch prey with their feet. But hawks usually kill their prey by squeezing it with their feet, and falcons kill by biting the prey's neck or by landing hard on it. Falcons in general are smaller than hawks and their wings are pointier. Hawks build nests and falcons nest on the ground, on rocky ledges, or in nests built by other birds.

BEHAVIOR AND REPRODUCTION

Falcons are powerful predators, animals that hunt others for food, and they are most likely the fastest flying birds of prey. Most of them hunt during the day, but several species also hunt after dark.

Most species in this family breed once a year. Except for the caracaras, they do not build nests. They lay their eggs in holes in trees and rocky cliffs or in the old nests of other birds. Usually the female sits on the eggs and stays with the young while the male brings food to her and the chicks. Young falcons depend on their parents for help with catching food for a while after they can fly.

FALCONS, CARACARAS, AND PEOPLE

Falcons are admired for their flying and hunting skills, and they appear in legends and on flags and shields of many countries.

In ancient Egypt, Horus was a god who looked like a falcon. About 4,000 years ago, people began to use falcons and hawks to capture meat for themselves. This is called falconry, and some people still practice it today.

CONSERVATION STATUS

Many falcons have been harmed by habitat loss, poisons, and people who do not like birds of prey. No species in the falcon family are listed as Endangered, but four of them are considered Vulnerable, facing a high risk of extinction. Six other species are listed as Near Threatened, close to becoming threatened, and could be heading for serious trouble.



CRESTED CARACARA

Polyborus plancus

SPECIES ACCOUNTS

Physical characteristics: The crested caracara is a medium-sized raptor with a bare red face and a black cap of feathers on top of its head. It has a white neck and throat with some dark streaks. The rest of its body is covered with dark feathers, except for some white streaks under its tail and in the tail feathers. Crested caracaras range in length from 19 to 23 inches (49 to 59 centimeters) from their beaks to end of their tails, with the females being the larger than the males.

Geographic range: Crested caracaras live in most of South America, Central America, and Mexico. They are also found in the southern United States.

Crested caracaras are unusual among falcons, in that they catch most of their prey by walking around fields and through shallow wetlands, rather than swooping down on their prey from above. (© Art Wolfe/Photo Researchers, Inc. Reproduced by permission.)



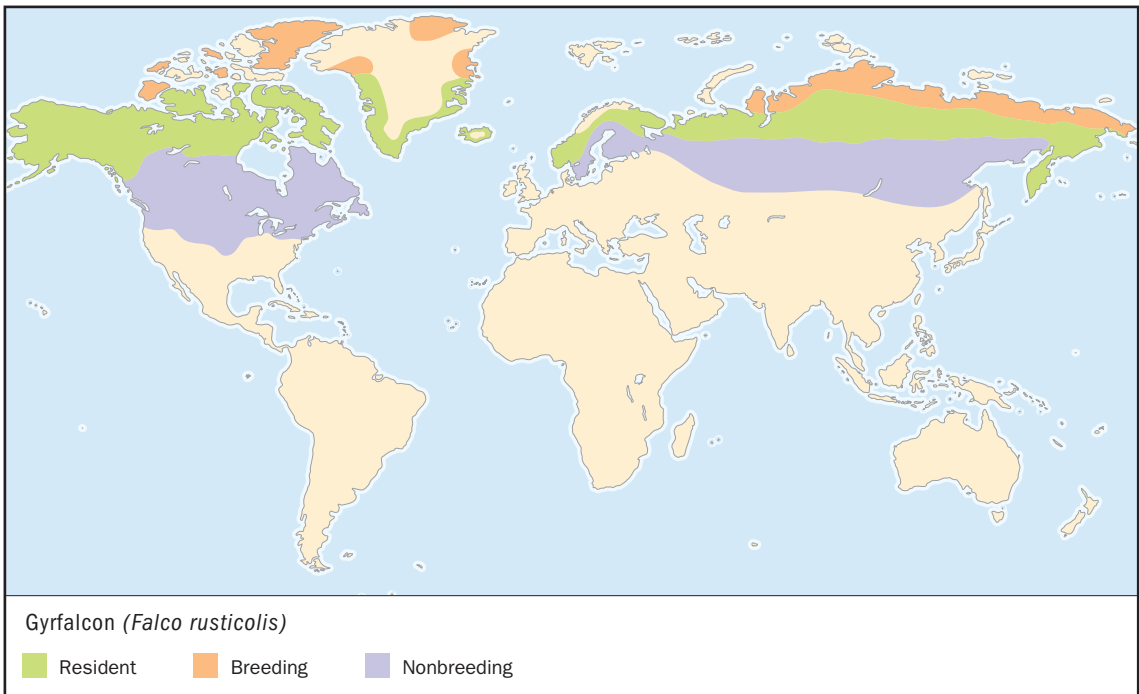
Habitat: Crested caracaras prefer open areas where they can see the animals they are hunting. They live in grasslands, deserts, farmlands, river edges, wetlands, and the grassy foothills of mountains. They like to have a few scattered trees available that can be used for roosting at night and for nesting.

Diet: Caracaras are unusual among falcons. They catch most of their prey by walking around fields and through shallow wetlands. But sometimes they watch for prey from fence posts and trees and look for dead animals along roads. They eat mostly grasshoppers and beetles, but they also eat other animals, eggs, fruit, and seeds.

Behavior and reproduction: They gather in groups at carcasses and in roosting trees at night. Pairs breed by themselves, and they build large stick nests in trees, on cactuses, or on the ground. The young stay with their parents for as long as three months after they can fly.

Crested caracaras and people: The crested caracara is the national bird of Mexico. Caracaras are clever, and they sometimes annoy campers by stealing their food.

Conservation status: Crested caracaras are not immediately threatened, but some sheep farmers kill them because they are afraid the birds will kill their lambs. ■



GYRFALCON

Falco rusticolis

Physical characteristics: The gyrfalcon (JERR-fal-kun) is the largest bird in the falcon family. Males weigh only about 65 percent as much as their mates. The birds' length varies from 18.9 to 25.2 inches (41 to 64 centimeters) from their beaks to the tip of their tails. Some gyrfalcons are almost pure white, others are gray with streaks, and still others are mostly dark brown.

Geographic range: Gyrfalcons breed around the Arctic circle in Iceland, Greenland, North America, Europe, and Asia, and some spend the winters farther south. They live the farthest north of all the raptors that hunt during the day.

Habitat: Gyrfalcons nest in the Arctic on the tundra (the cold, windy, dry region where trees cannot grow). They range from northern sea-coasts to about 4,600 feet (1,400 meters) up mountainsides and along rivers. In winter, the birds that bred the farthest north fly south to



Gyrfalcons nest in the Arctic tundra, and each pair of birds breeds on its own. (© Jim Zipp/Photo Researchers, Inc. Reproduced by permission.)

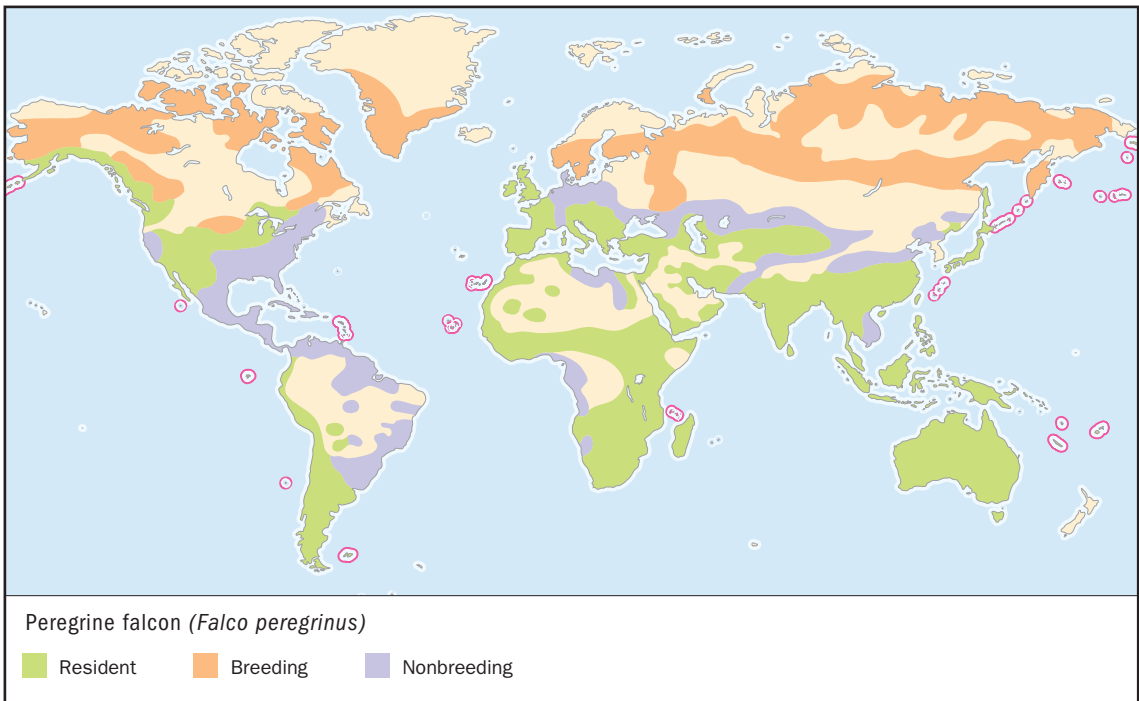
warmer grasslands, farmlands, seacoasts, and river valleys where prey is plentiful.

Diet: Birds (especially ptarmigans [TAR-mih-gunz] and grouse) and mammals (ground squirrels and lemmings) make up most of the gyrfalcons' diet. They fly low and fast to surprise their prey, and they grab the prey with their feet. The gyrfalcons that live on seacoasts often kill nesting seabirds and waterfowl.

Behavior and reproduction: Gyrfalcon pairs breed by themselves. They lay their eggs on cliff ledges or in nests built by raves, eagles, and other birds. The number of eggs laid is usually three or four, but they may lay as many as seven. The female stays with the eggs and chicks while the male brings food. But by the time the chicks are ten days old, she has to help feed them. The young birds can fly at about seven weeks.

Gyrfalcons and people: Falconers (people who train birds to hunt) often use gyrfalcons. The birds are raised in captivity now, so falconers do not have to take them from the wild.

Conservation status: Gyrfalcons are not listed as threatened. ■



PEREGRINE FALCON

Falco peregrinus

Physical characteristics: A peregrine falcon's body is designed for speed, and it is the fastest, most skillful bird of prey on Earth. It also has remarkable eyesight and hearing. The birds are between 13.4 and 19.7 inches (34 and 50 centimeters) long from their beaks to the end of their tails. The female usually weighs about twice as much as her mate. Peregrines have dark feathers on their upper parts and lighter-colored feathers below, with streaks on their under parts.

Geographic range: Peregrine falcons most likely breed in more places in the world than any other bird. They are found on all continents except the Antarctic and on many ocean islands.

Habitat: Peregrines can live almost anywhere, from the hot tropical lands to the cold coasts of the North, and from sea level to 13,000-foot (4,000-meter) mountains. They live on islands and rocky cliffs,



in deserts and forests, and on the treeless tundra. They also live among skyscrapers in large cities.

Diet: Peregrine falcons are famous for the way they catch birds in mid air. A peregrine flies high until it sees a bird flying below. Instantly, it folds its pointed wings and dives steeply down, hitting and killing the bird at more than 100 miles (160 kilometers) per hour. Then the peregrine either catches the dead bird, or it dives past the bird and picks it up on the ground. Peregrines occasionally hunt on the ground and eat mammals, reptiles, insects, and fish.

Behavior and reproduction: They usually build their nests on cliff ledges or in caves. They also nest on window ledges and bridges. Peregrines lay between two and four eggs, and the chicks are able to fly when they are just five or six weeks old.

Peregrine falcons and people: People working in skyscrapers enjoy watching the wild peregrines that now nest in big cities.

The peregrine falcon is the fastest bird of prey on Earth, and has remarkable eyesight and hearing. (© Tim Davis/Photo Researchers, Inc. Reproduced by permission.)

The birds are also trained by falconers to kill animals and leave them for their owners.

Conservation status: Peregrine falcons are not listed as Endangered by the World Conservation Union (IUCN), but they were put on the list of Endangered Species of the United States in 1970 when insect poisons got into their food. They are making a good comeback with the help of scientists and conservationists, and in 1999 they were removed from the list. ■

FOR MORE INFORMATION

Books:

Bailey, Jill. *The Secret World of Falcons*. Austin, TX: Steck-Vaughn publishers, 2002.

Elphick, Chris, John B. Dunning, Jr., and David Allen Sibley. *National Audubon Society: The Sibley Guide to Birdlife and Behavior*. New York: Alfred A. Knopf, 2000.

Jenkins, Priscilla Belz. *Falcons Nest on Skyscrapers*. New York: Harper-Collins Publishers, 1996.

Laubach, Christyna, Rene Laubach, and Charles W. G. Smith. *Raptor! A Kid's Guide to Birds of Prey*. North Adams, MA: Storey Books, 2003.

Parry-Jones, Jemima. *Eyewitness: Eagle & Birds of Prey*. London and New York: DK Dorling Kindersley, 2000.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Weidensaul, Scott. *The Raptor Almanac*. New York: The Lyons Press, 2000.

Periodicals:

"Falcon Comeback." *Science World* (April 2000): 9.

Miller, Claire. "New Birds on the Block (Peregrine Falcons)." *Ranger Rick* (June 1993): 4–11.

"Monitoring Effort Helps Northeast Falcons Rebound." *National Wildlife* (April/May 2002): 61–62.

Rideout, Joanne. "The Urban Falcon." *E Magazine: The Environmental Magazine* (March/April 2001): 19–20.

Wexo, John Bonnett. "Birds of Prey." *Zoobooks* (February 2001): 1–18.

White, Mel. "Raptor Central." *National Geographic Traveler* (May/June 2001): 6.

Web sites:

"About Falcons." The Hawk Conservancy Trust. <http://www.hawk-conservancy.org/priorfalcons.shtml> (accessed on May 20, 2004).

"Caracaras and Falcons." Arizona Sonora Desert Museum, ASDM Press. http://www.desertmuseum.org/books/nhsd_caracaras_falcons.html (accessed on May 20, 2004).

The Peregrine Fund. World Center for Birds of Prey. <http://www.peregrinefund.org> (accessed on July 13, 2004).

Raptor Research Foundation. <http://biology.boisestate.edu/raptor> (accessed on July 13, 2004).

Tarski, Christine. "Everything About Caracaras." Birding. About <http://birding.about.com/od/birdscaracaras/> (accessed on May 20, 2004).

DUCKS, GEESE, SWANS, AND SCREAMERS

Anseriformes

Class: Aves

Order: Anseriformes

Number of families: 2 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Waterfowl, including ducks, geese, and swans, vary greatly in size and weight. The smallest is the tropical pygmy-goose, which weighs just 10 ounces (269 grams) and stands 12 inches (30 centimeters) tall. The largest is the trumpeter swan, which stands at 72 inches (183 centimeters) and weighs more than 38 pounds (17 kilograms). Screamers are large birds, standing 30 to 37 inches (76 to 95 centimeters) and weighing anywhere from 6 to 88 pounds (3 to 40 kilograms). Their wingspan is 5.6 feet (170 centimeters).

These birds have compact bodies with long necks and full webbing between the three forward-pointing toes. The lower bill is flat while the upper is cone-shaped with a sort of nail at the tip. Waterfowl are unable to glide but can fly quickly with their necks outstretched. Five species are flightless, including three of the four species of steamer-ducks, the Auckland Island teal, and the Campbell Island teal. Screamers look like geese but they have a small, chicken-like head. Their feathers are gray or greenish-black, with some white on the head and neck, fading into the forewing. The screamer has a feathered “horn” on the front top of its head, and its eyes range from yellow to orange. Screamers, like waterfowl, have webbing between their toes.

Ducks, swans, and geese have broad wings that come to a point. Feather coloration varies from the white of most swans to the brown of many geese to the bright patterns of many northern ducks. Male coloration is more vibrant than that of females. Geese and swans molt, shed their feathers, once a year

phylum

class

subclass

● **order**

monotypic order

suborder

family

while ducks molt twice each year. During the molting season, waterfowl are flightless except for the magpie goose. Screamers molt gradually and so are never rendered flightless.

GEOGRAPHIC RANGE

Screamers are found only in South America, whereas ducks, geese, and swans are found throughout the world except in the Arctic region.

HABITAT

Waterfowl and screamers can be found in virtually any wetland as long as there is sufficient food available. Screamers inhabit tropical and subtropical wetlands such as marshes, swamps, and lagoons. They also are found on savannas, a tropical plant environment made up of shrubs, trees, and grasses, and the flood plains of tropical forests. Some waterfowl are found in saltwater environments outside of breeding season.

DIET

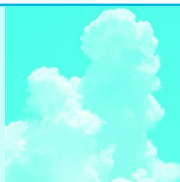
The herbivorous, plant-eating, screamer and waterfowl eat mostly leaves, flowers, and seeds of aquatic vegetation. They also eat small fish, insects, and plankton.

BEHAVIOR AND REPRODUCTION

Most waterfowl are active during the day and seek the safety of shelter at night. When not nesting, they are social birds and gather in groups during the winter months. These groups can reach up to three thousand birds. When nesting, though, they prefer to be alone for the most part. Screamers are solitary, alone, nesters as well.

Screamers build their nests out of weeds and sticks and choose sites close to the water. A seasonally monogamous, one mate per season, bird, screamers often return to the same nest for many seasons, and some use the same nest for life. Both sexes build and defend the nest. They lay two to seven eggs, which parents will take turns incubating, warming, for forty-two to forty-five days. They cover the eggs with weeds if they must both leave the nest. New chicks are tended to for just a couple days, and they are ready for flight by eight to ten weeks. They are completely independent by fourteen weeks of age.

Screamers get their name for the loud vocalizations used to defend territory and to call out to one another. Their screams can be heard from a distance of 1.9 miles (3 kilometers).



MASS KILLING OF MUTE SWANS HALTED

In September 2003 the U.S. Fish and Wildlife Service withdrew all permits to hunt mute swans nationwide.

Mute swans have been blamed for damaging the environment because they consume large amounts of submerged aquatic vegetation (SAV). This consumption, some experts argue, threatens the vegetation as well as wildlife that depend on it. Most experts agree, however, that the greatest threat to SAV

in the Chesapeake Bay is lack of light, which prohibits photosynthesis, the process in which plants use sunlight as energy for growth.

Mute swans have been blamed for the difficulties reintroducing trumpeter swans in Wisconsin because they are aggressive.

Mute swans are not native to the United States, but were introduced in the 1800s; their population now exceeds fourteen thousand along the East Coast.

Some species of waterfowl build their nests near the water, while others nest more than a mile from the waters' edge. Those that nest far away are surface-feeding ducks that can walk without difficulty. Most nest on the ground while others build their homes in trees. The nest is made of whatever can be found around the site, and shortly before the eggs are laid, females pluck the soft down from their undersides and line the nest with it. Clutch, number of eggs laid, sizes vary greatly, from two to twenty-two. Incubation lasts from twenty-two to forty days, and with the exception of a few species, males do not assist in this duty. Chicks are born with a covering of down that becomes water repellent as it rubs against the mother's feathers. Ducklings feed independently the first day. Ducks care for their young until they are able to fly, between forty to seventy days. Geese and swans care for their young until the following spring.

Predators of waterfowl and screamers include red fox, coyote, weasel and mink, crow, owl, raccoon, badger, skunk, magpie, and skuas.

DUCKS, GEESE, SWANS, SCREAMERS AND PEOPLE

Humans hunt waterfowl as a food source, and waterfowl are domesticated for their eggs, liver, and meat. Eiders are raised

for their feathers, which are used in comforters, sleeping bags, and pillows.

CONSERVATION STATUS

Six species of Anseriformes are listed as Extinct, no longer existing, and another fourteen are listed as Endangered, facing a very high risk of extinction in the wild in the near future. Twelve are listed as Vulnerable, facing a high risk of extinction in the wild in the medium-term future, and eight are listed as Near Threatened, in danger of becoming threatened with extinction. The reasons for the threats to these populations are habitat destruction, human hunting and collecting, and toxic poisoning due to modern agricultural methods.

FOR MORE INFORMATION

Books:

Burnie, David, and Don E. Wilson, eds. *Smithsonian Institution Animal: The Definitive Visual Guide to the World's Wildlife*. New York: DK Publishing, 2001.

LeMaster, Richard. *Waterfowl Identification: The LeMaster Method*. Mechanisburg, PA: Stackpole Books, 1996.

Miller, Sara Swan. *From Swans to Screamers*. New York: Scholastic Library Publishing, 2000.

Smith, Christopher. *Field Guide to Waterfowl and Upland Birds*. Belgrade, MT: Wilderness Adventures Press, Ltd., 2000.

Wexo, John. *Ducks, Geese, and Swans (Zoobook Series)*. Poway, CA: Wildlife Education, Ltd., 2001.

Periodicals:

"No Swansong in the Chesapeake Bay—Spectrum—Mute Swan Killing Stopped." *Environment* (December 2003): 7.

Quick, Suzanne. "Plan to End Protection of Mute Swans Raise Flaps." *Milwaukee Journal Sentinel Online* (May 16, 2004). Online at <http://www.jsonline.com/news/state/may04/229949.asp> (accessed on May 27, 2004).

Web sites:

"Anseriformes." *The Chaffee Zoo*. <http://www.chaffeezoo.org/animals/anseriformes.html> (accessed on May 27, 2004).

Ducks Unlimited. <http://www.ducks.org> (accessed on May 27, 2004).

Howard, Laura. "Family Anhimidae." *Animal Diversity Web*. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anhimidae.html> (accessed on May 27, 2004).

Howard, Laura. "Family Anitidae." *Animal Diversity Web*. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anatidae.html> (accessed on May 27, 2004).

Howard, Laura. "Order Anseriformes." *Animal Diversity Web*. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anseriformes.html> (accessed on May 27, 2004).

"USFWS Drops Mute Swan Killing Plan." *The Humane Society of the United States*. <http://www.hsus.org/ace/19328> (accessed on May 27, 2004).

Waterfowl USA. <http://www.waterfowlusa.org> (accessed on May 27, 2004).

DUCKS, GEESE, AND SWANS

Anatidae

Class: Aves

Order: Anseriformes

Family: Anatidae

Number of species: 147 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Anatids (members of the family Anatidae) are medium to extra-large birds with stocky bodies, webbed feet, and a flat bill. Coloring varies but is primarily brown with white, black, and metallic green accents. The smallest species stands 13 inches (33 centimeters) and weighs no more than 0.5 pounds (0.2 kilograms) while the largest grows up to 6 feet (1.8 meters) in length and weighs up to 49 pounds (22.5 kilograms).

GEOGRAPHIC RANGE

Found on all continents except Antarctica.

HABITAT

Anatids need water. Some require fast-flowing streams; others prefer rainforests, tundra, or even the lava fields of volcanoes. Marshland is another common habitat for these birds.

DIET

Despite the fact that most geese, ducks, and swans require water bodies for survival, not all species eat aquatic food. Some species are vegetarian and eat primarily seeds, roots, leaves, and stems. Others eat insects, and still others thrive almost exclusively on aquatic invertebrates (water animals without backbones). Some anatids favor plankton and algae (AL-jee).

BEHAVIOR AND REPRODUCTION

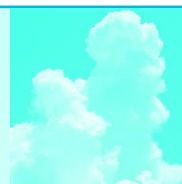
Nearly half of all anatids migrate (move from region to region, seasonally), and most of those that don't tend to wander over a wide area to remain near a plentiful water supply.

Anatids are known for their flock formations, which experts believe may help them in locating food as well as protect them from predators, animals that hunt them for food. Aside from humans, primary predators include red foxes, badgers, raccoons, coyotes, skunks, weasels, minks, owls, skuas, American crows, and black-billed magpies.

Anatids use their ritualized displays to help keep family groups close, convey information about reproductive status, defend territory or mates, and establish pair bonds. They communicate via sounds as well, with whistles, quacks, and honks. They spend a great deal of time in the water, preening themselves. Anatids use their bills to water-proof their feathers with oil secreted from a gland near their eyes. Waterfowl are social and live in flocks of up to several hundred thousand birds.

Although most anatids are monogamous (muh-NAH-guh-mus; have only one mate), some have several mating partners each season. Those species that are monogamous stay paired for one season, several seasons, or even for life. Breeding season varies depending on region. Courtship displays include vocalization as well as specific swimming patterns and movements. Almost all anatids mate on the water. Nests are then built on land in areas with dense vegetation. Nests are often lined with feathers. Usually the female builds the nest while the male defends her and their territory.

Eggs are laid over a twenty-four-hour period, and average clutch sizes range from four to thirteen eggs. Incubation (warming sufficiently for hatching) lasts from twenty-two to forty days and is done by the female. With a few species exceptions, males also don't help care for their young. Some anatid species lay their eggs in other females' nests. Within hours of hatching, chicks follow their mother on food outings and are often accompanied by their father, who protects his brood from predators. Chicks stay with mothers for five to ten weeks and are ready to mate around the age of one to three years.



MAKE WAY FOR DUCKLINGS

In May 2004, a mallard duck hatched thirteen ducklings in the courtyard of Christopher Farms Elementary School in Virginia. Prior to their hatching, school officials were not even aware of the nest.

According to an article written by journalist Mary Reid Barrow and printed in *The Virginian Pilot*, the mother was able to fly in and out but the babies were stuck inside the courtyard in the center of the school. Teachers and others got behind the mother, who repeatedly circled with her ducklings in front of the main doors, and edged all fourteen ducks through the school via the main hallway and out the door.

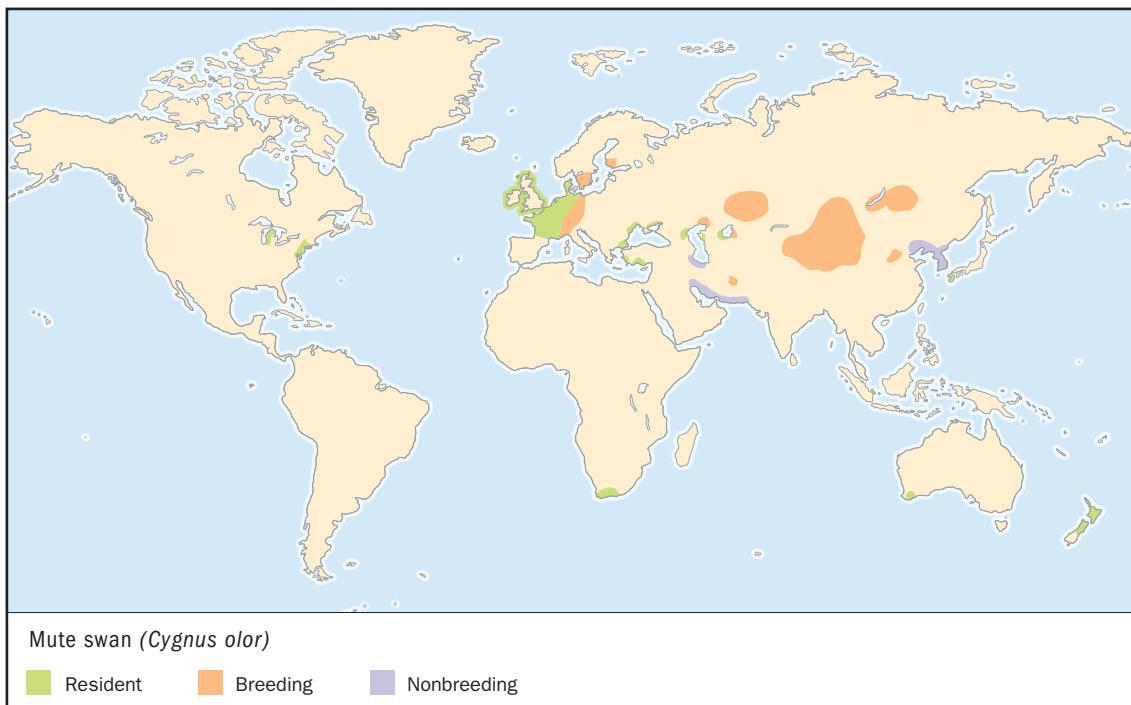
The family went straight for a nearby pond without another problem.

DUCKS, GEESE, SWANS, AND PEOPLE

Anatids and humans have a long history of interaction. Humans have domesticated (tamed) a number of species and have hunted waterfowl almost since the beginning of humankind. Waterfowl hunting is a huge source of revenue in the United States, with outdoor stores selling millions of dollars worth of hunting gear. Also, waterfowl play an important role in keeping the balance of wetland ecosystems.

CONSERVATION STATUS

Six species are Extinct, died out. Four are Critically Endangered, facing an extremely high risk of extinction; nine are Endangered, facing a very high risk of extinction; and twelve species are listed as Vulnerable, facing a high risk of extinction. The greatest threats to these birds are overhunting and wetland drainage. When wetlands are drained, waterfowl can no longer breed there. Pollution from industry also threatens birds in rivers and streams.



MUTE SWAN *Cygnus olor*

SPECIES ACCOUNTS

Physical characteristics: This large, white bird weighs anywhere from 14.6 to 33 pounds (6.6 to 15 kilograms) and measures 4 to 5.3 feet (1.3 to 1.6 meters) in length. Its neck is S-shaped, and the bill is orange with a black base. Wingspan measures 7 to 8 feet (2.1 to 2.4 meters). Males and females look alike except males are larger.

Geographic range: Found in central and northern Europe. The mute swan winters in northern Africa, the Near East, and to northwest India and Korea. It has been introduced into the United States.

Habitat: Mute swans require water with plenty of vegetation, such as lagoons, marshes, lakes, and canals.

Diet: Mute swans eat aquatic vegetation, including grass and seeds. They also feed on invertebrates, insects, aquatic worms, and small amphibians. Mute swans do not dive but reach under the water with their long necks and grab food.



Mute swans live in lagoons, marshes, lakes, and canals that have plenty of vegetation. They do not dive but reach under the water with their long necks and grab food. (Frank Krahmer/Bruce Coleman Inc. Reproduced by permission.)

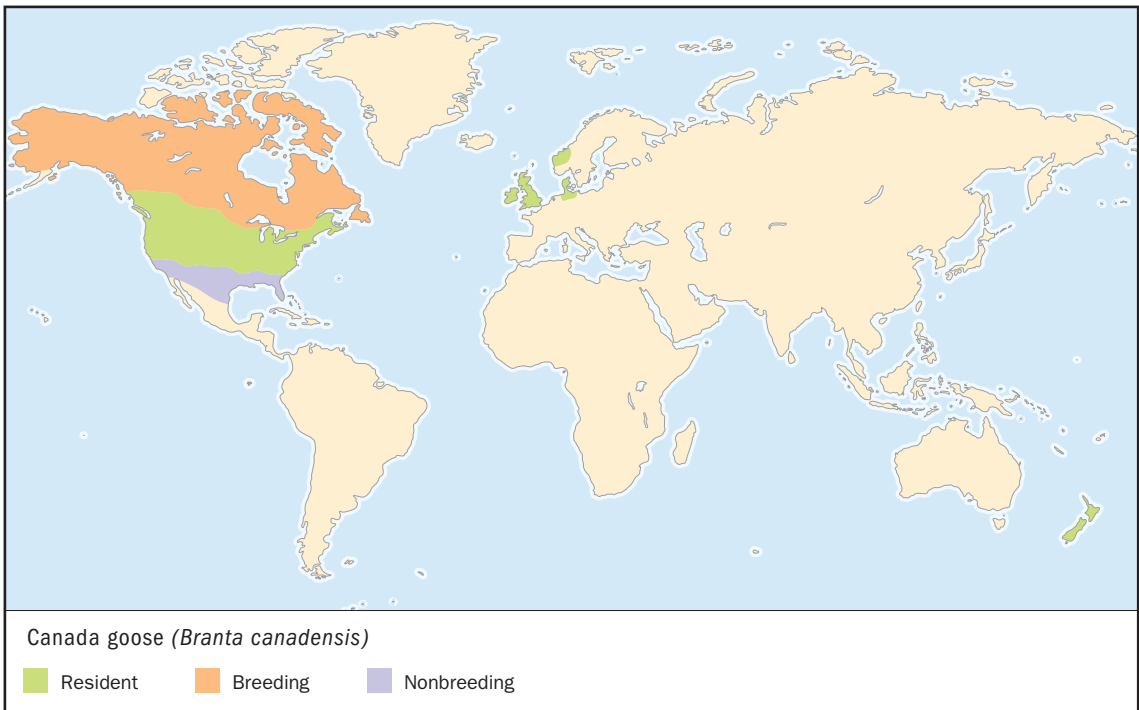
Behavior and reproduction: Mute swans get their name for their silence. Only when they're mad will they hiss. This bird is territorial and will fight to the death to defend its home range, which can encompass up to 10 acres (4 hectares). Unlike most anatids, mute swans do not migrate in large flocks. Mute swans fly at a rate of 50 to 55 miles per hour (80.5 to 88.5 kilometers per hour).

Mute swans do not mate for life, but do usually maintain a pair bond for one breeding season. These birds build their large nests in March and April, and the nests are made of vegetation lined with feathers and down. Nests are built in the reeds surrounding water or on floating mats. Clutch size is usually five to seven eggs, sometimes as large as twelve. Incubation lasts thirty-six to thirty-eight days. Chicks (also called cygnets; SIG-nuts) are born with grayish-brown feathers that will turn white within twelve months. The tiny birds stay in the nest only for about an hour. Cygnets ride under parents' wings or on their backs. By the next mating season, parents chase away their young. Mute swans don't usually breed before the age of three years. They oldest known mute swan in the wild was nineteen years.

Mute swans and people: Mute swans have been known to knock down jet-skiers, and they can be dangerous to small children. They

will attack people who get too close to their nests. These birds were saved from extinction due to hunting in Britain when people began domesticating them. The mute swan is the most common swan and is often seen in parks. It is a symbol of love and purity.

Conservation status: Not threatened. In fact, the population of this swan is on the rise. ■



CANADA GOOSE *Branta canadensis*

Physical characteristics: This is a large goose with a solid black neck. The head is also black, but there is a white band running underneath the chin. The Canada goose weighs 4.5 to 14.4 pounds (2 to 6.5 kilograms) and stands 21.7 to 43.3 inches (55 to 110 centimeters) tall. Its bill is black, as are its feet. The plumage (feathers) is various shades of brown. Adults lose their feathers and become flightless for three to four weeks each summer until their feathers regrow.

Geographic range: Found in most of Canada and in the United States.

Habitat: The Canada goose feeds in grassland and open marshes. Like other waterfowl, it requires a permanent body of water in which to live.

Diet: Canada geese eat a variety of grasses by pulling them from the ground with their bills. They also feed on corn, wheat, and rice.

The mostly herbivorous, eating plant material, bird also eats aquatic vegetation.

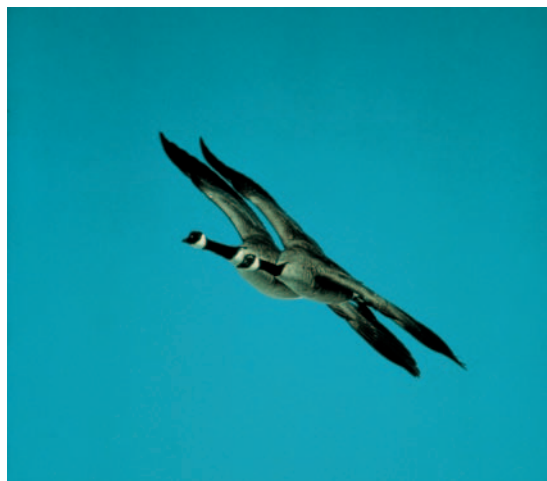
Behavior and reproduction: Canada geese migrate slowly in a V-shaped formation, and you know they're above by their loud honking. Each formation is comprised of a number of smaller family groups, and if you watch them land, you'll see the families break off into their individual units. This species can be aggressive and will attack if threatened. These geese are vocal, and pairs will "talk" with one another so quickly that it sounds as if all the sound is coming from just one bird. Babies have a particular raspy call they use to summon their parents.

Canada geese mate for life. They build their nests from grasses and other available vegetation and line them with cattail down. Nests are usually near water. Females lay four to seven eggs and incubate them for twenty-five to thirty days. Within one day of hatching, goslings are led to water by their mother. Canada geese parents often gather goslings into groups and look after them communally. Goslings fly for the first time between forty and eighty-six days, and are ready to mate between two and three years. The average lifespan in the wild is fifteen to twenty years.

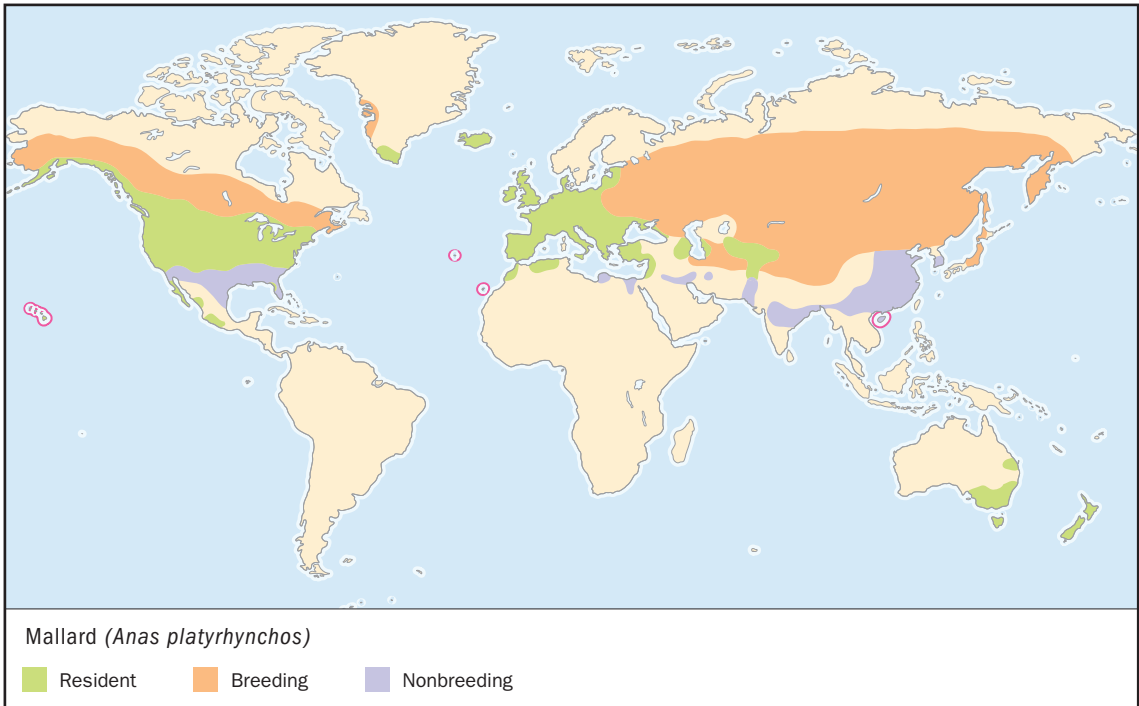
A group of flying geese is called a gaggle. A group of geese on the ground is called a skein (skayn).

Canada geese and people: More than most anatids, this species is tolerant of humans. While this has endeared the bird to some, it has been a source of irritation for others. Canada geese like to live in habitats such as golf courses, and their presence is of concern to country clubs and the like. Some humans enjoy feeding these geese, while others prefer hunting them.

Conservation status: Canada geese are not threatened. ■



Canada geese mate in pairs for life. These geese fly together during courting, before they mate for the season. (Jack A. Barrie/Bruce Coleman Inc. Reproduced by permission.)



MALLARD

Anas platyrhynchos

Physical characteristics: Mallards weigh between 1.7 and 3.5 pounds (750 to 1,580 grams) and measure 19.7 to 25.6 inches (50 to 65 centimeters) long. The head of the male is metallic green and the chest is brown. Feet are orange.

Geographic range: Without doubt the most abundant duck, there are approximately ten million mallards in North America and millions more in Eurasia, Europe, and Asia.

Habitat: Mallards live in the shallow, calm waters of wetlands, including marshes, bays, and even city ponds. They prefer to have the protection of some vegetative cover.

Diet: Mallards eat fish, amphibians, and invertebrates. They also on plant parts and eat insects and worms. They eat by dipping their heads beneath the water's surface or by upending, but rarely do they dive.

Behavior and reproduction: Mallards are territorial and become very aggressive when their space is intruded upon. A migratory bird, mallards are among the first to return to breeding grounds in the spring.

Males and females search for nesting ground together. The female lays eight to twelve eggs in her ground nest. Incubation lasts twenty-seven to twenty-eight days, during which the male leaves the female to join a new flock. Ducklings fly between the age of fifty and sixty days and are ready to breed at one year. Mallards are seasonally monogamous, have just one mate per season, and have been known to breed with other species.

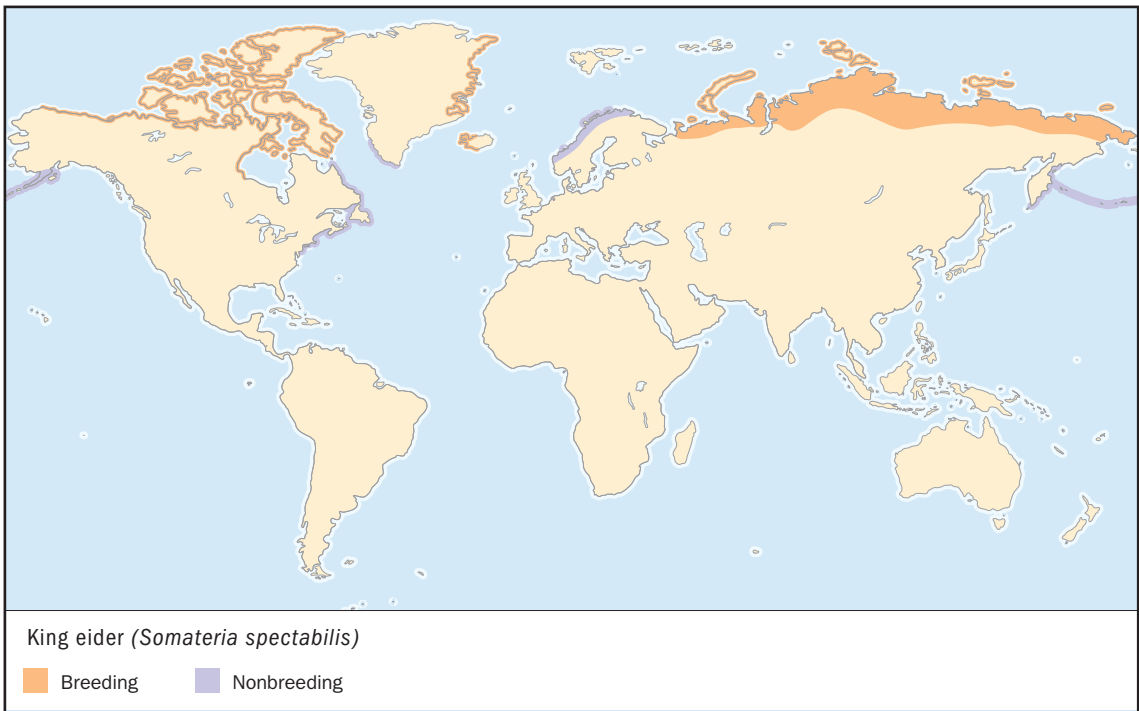
Mallards are vocal. The male makes soft sounds while the female quacks so loudly that her call can be heard from miles away. Hawks prey on eggs, but adult mallards are preyed upon primarily by human hunters.

Mallards and people: Mallards are popular with humans because of their beautiful coloration and for their abundant numbers. In Canada, 50 percent of all ducks are mallards. This species is highly tolerant of human activity, which is why public parks are popular habitats. People not only hunt adult mallards for their meat, but also harvest their eggs.

Conservation status: Mallards are common, and not threatened. The Hawaiian subspecies are rare. ■



Mallards live in the shallow, calm waters of wetlands, including marshes, bays, and even city ponds. These birds migrate, and are some of the first to return to breeding grounds in the spring. (© Manfred Danegger/OKAPIA/Photo Researchers, Inc. Reproduced by permission.)



KING EIDER *Somateria spectabilis*

Physical characteristics: Weighs 3.3 to 4.4 pounds (1.5 to 2 kilograms) and measures 17 to 25 inches (43 to 63 centimeters) in length. Male has a blue, yellow, and white head. Bill is bright orange and yellow and develops from a “shield” from the top of the face.

Geographic range: King eiders live on the Arctic coasts. They winter off the coast of Iceland, Norway, Kuril and Aleutian Islands, and as far south as California and Long Island (New York).

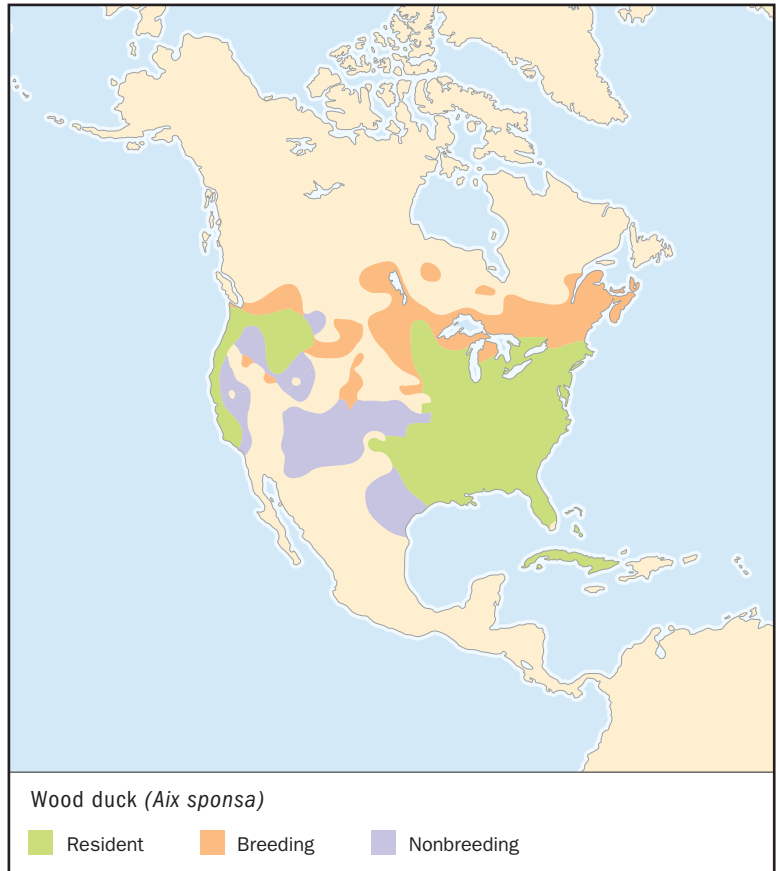
Habitat: Lives in oceans and other saltwater areas. Breeds on land in Arctic freshwater wetlands.

Diet: King eiders eat mostly mussels, sand dollars, squid and small fish. They dive (sometimes as deep as 150 feet, or 50 meters) and up-end (put their heads under while their back end stays out of the water) to retrieve food. They also eat tundra vegetation.

Behavior and reproduction: Eiders migrate in a straight line. They are seasonally monogamous, and the male leaves the female midway through incubation. Females lay four to five eggs into holes in the ground that have little lining. Incubation lasts twenty-two to twenty-four days. Ducklings are ready to breed at three years.

King eiders and people: This duck is hunted for food and game, and its down is among the highest quality available, used to make pillows and comforters.

Conservation status: The king eider is common throughout its range. ■



WOOD DUCK *Aix sponsa*

Physical characteristics: The male is more colorful than the female, with a metallic green crest and crown surrounding his purple face. Throat is white; tail is square. The body of both sexes is various shades of brown. Measures 17 to 20 inches (43 to 51 centimeters) and weighs about 1.3 pounds (0.6 kilograms).

Geographic range: Found in eastern North America from the southern tip of Florida to northern Nova Scotia, west across Quebec and Ontario to the southern tip of Texas.

Habitat: Wood ducks live in woodland streams and pools, river valleys, swamps and marshlands, and lakes.

Diet: Wood ducks feed primarily on aquatic vegetation. They also eat water and land invertebrates as well as berries, nuts, and seeds.

Behavior and reproduction: This duck migrates to Cuba, the Bahamas, and Mexico for the winter. It is territorial and will defend its range, which is about 24 acres (9.7 hectares) per breeding pair. Wood ducks are vocal, especially during migration.

Pairs form in the fall and are seasonally monogamous. The female lays anywhere from six to fifteen eggs in nests that are actually holes in tree trunks or former woodpecker holes. Incubation lasts twenty-eight to thirty-seven days, and the male leaves just a few days before ducklings hatch. Young leave the nest within two days and are ready to mate at one year. Snapping turtles are the primary predators of eggs and ducklings.

Wood ducks and people: Humans overhunted and destroyed habitats of the wood duck almost to extinction in the early 1900s. The hunting season was declared closed in 1918, which allowed for repopulation.

Conservation status: The white-winged wood duck is considered Endangered, and the black-billed wood duck is Vulnerable due to habitat destruction. ■

FOR MORE INFORMATION

Books:

Burk, Bruce. *Waterfowl Studies: Geese and Swans*. Vol. 3. Atglen, PA: Schiffer Publishing, 1999.

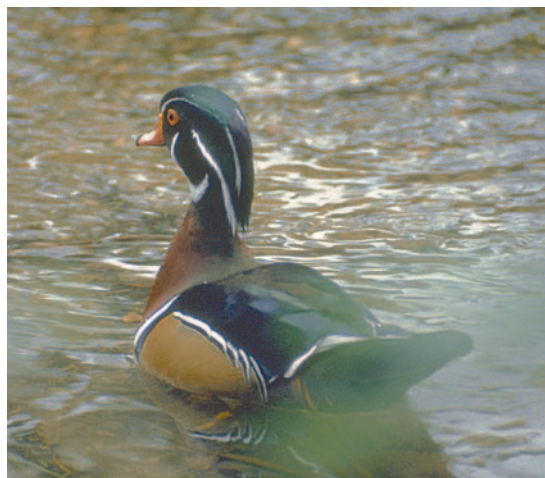
Hehner, Mike, Chris Dorsey, and Greg Breining. *North American Game Birds (Hunting and Fishing Library Series)*. Chanhassen, MN: Creative Publishing International, 2002.

Shurtleff, Lawton L., and Christopher Savage. *The Wood Duck and the Mandarin: The Northern Wood Ducks*. Berkeley, CA: University of California Press, 1996.

Sibley, David Allen, Chris Elphik, and John B. Dunning, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Knopf Publishing Group, 2001.

Periodicals:

Barrow, Mary Reid. "School Helps Duck Family, and Students Get an Education." *The Virginian Pilot* (May 16, 2004).



The wood duck is found in eastern North America, and migrates to Cuba, the Bahamas, and Mexico for the winter. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

Web sites:

"The Birdhouse Network: Wood Duck." Lab of Ornithology. http://birds.cornell.edu/birdhouse/bird_bios/speciesaccounts/wooduc.html (accessed on May 25, 2004).

Canada Goose Conservation Society. <http://www.cgcs.demon.co.uk/> (accessed on May 25, 2004).

Howard, L. "Anatidae." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anatidae.html> (accessed May 25, 2004).

"King Eider." Enature. <http://www.enature.com/fieldguide/showSpeciesFT.asp?fotogID=548&curPageNum=1&recnum=BD0675> (accessed on May 25, 2004).

"Mute Swan." Tropical Birds of Paradise. http://www.auburnweb.com/paradise/birds/mute_swan.html (accessed on May 25, 2004).

"Nature: Wood Duck." Texas Parks and Wildlife Department. http://www.tpwd.state.tx.us/factsheets/birds/wood_duck/wood_duck.htm (accessed on June 1, 2004).

family CHAPTER

SCREAMERS

Anhimidae

Class: Aves

Order: Anseriformes

Family: Anhimidae

Number of species: 3 species

PHYSICAL CHARACTERISTICS

Screamers are large, goose-like birds that swim well and live in and near fresh water. They have a horn-like projection on top of their heads, and a short, downcurved bill. Their legs are long and thick, and their feet are only shallowly webbed. Wings are long and broad, which makes them able to soar well. They weigh 5 to 7 pounds (2 to 3 kilograms) and measure 28 to 36 inches (71 to 92 centimeters) long.

Each wing has a sharp, spur-like outgrowth of bone. These spurs, which are used as weapons, are covered with keratin, the same material that makes up hair and fingernails. Body coloration is black or gray on top with lighter hues below.

GEOGRAPHIC RANGE

Screamers are found in South America, from Venezuela and Colombia to Uruguay and northern Argentina.

HABITAT

Screamers live in swamps, marshes, lagoons, and lakes as well as flood plains, meadows, and savannas (tropical or subtropical plant communities characterized by low trees and shrubs as well as grasses and herbs).

DIET

Screamers are vegetarian birds that feed on aquatic plants and seeds. They do not dive for food.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

BEHAVIOR AND REPRODUCTION

Screamers remain in their breeding range year-round and are somewhat social. Outside the breeding season, they tend to flock together. And though they swim well, screamers mostly live on land. Their long toes make them able to walk on aquatic vegetation and floating mats. Screamers got their name because of their very loud vocalizations.

Screamers are solitary nesters that build their nests out of vegetation, weeds, and sticks on or near the water. The female lays two to seven spotted eggs, and incubation (warming sufficient for hatching) lasts forty-two to forty-five days. Parents take turns incubating, and the male helps care for newborns. Chicks leave the nest within a few days. Babies first fly at ten to twelve weeks, and they no longer require parental care around twelve to fourteen weeks.

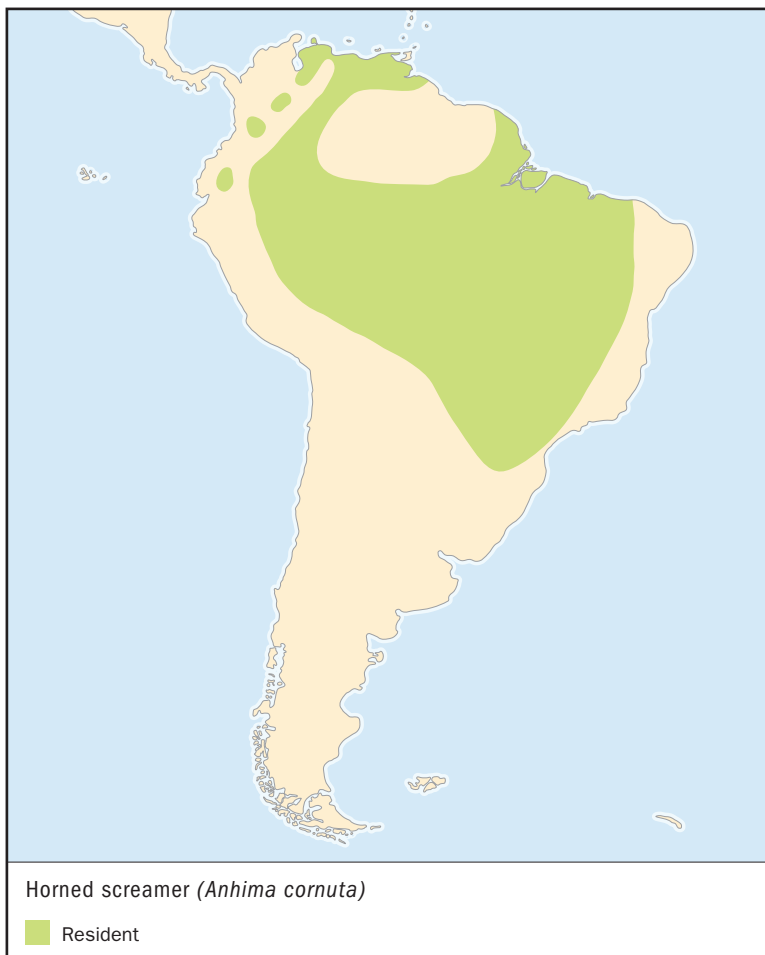
Screamers are seasonally monogamous (muh-NAH-guh-mus; having just one mate each year). The expected life span in the wild is eight to ten years. Predators include skunks, weasels, and red fox.

SCREAMERS AND PEOPLE

Though sometimes hunted for food, screamers are more likely to be captured and tamed. They adapt easily to captivity and can be kept with chickens. They walk around freely at South American parks and zoos.

CONSERVATION STATUS

The northern screamer is listed by the IUCN as Near Threatened, at risk of becoming threatened. Although it is not in immediate peril, its numbers have drastically fallen in recent years due to habitat destruction.



HORNED SCREAMER

Anhima cornuta

SPECIES ACCOUNT

Physical characteristics: The horned screamer measures 34 to 37 inches (86 to 94 centimeters) long. Its body is greenish black with a white belly. A “horn” protrudes from its forehead.

Geographic range: Found in the Amazonian regions of Venezuela, the Guianas, Colombia, Ecuador, Peru, Bolivia, and Brazil.

Habitat: The horned screamer lives in wetlands of tropical forests such as lakes, swamps, and marshes. It is found at altitudes up to 3,300 feet (1,100 meters).

Diet: Horned screamers eat aquatic vegetation.

Behavior and reproduction: This bird has a distinctive set of calls that can be heard for miles. It swims or walks on vegetation while feeding, and likes to rest in shrubs and trees rather than on the ground.

Screamers build floating nests of plants and vegetation. The female lays two eggs, which are incubated by both parents. Both parents also care for the young.

Horned screamers and people: These birds are tamed and kept as pets. They are also hunted for their meat.

Conservation status: Horned screamers are not considered to be threatened. ■

FOR MORE INFORMATION

Books:

Bird, David M. *The Bird Almanac: A Guide to Essential Facts and Figures of the World's Birds*. Buffalo, NY: Firefly Books, 2004.

Hilty, Steven L. *Birds of Venezuela*, 2nd ed. Princeton, NJ: Princeton University Press, 2003.

Sibley, David Allen, Chris Elphik, and John B. Dunning, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Knopf Publishing Group, 2001.

Web sites:

Howard, L. "Anhimidae." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anhimidae.html> (accessed on June 1, 2004).

CHICKEN-LIKE BIRDS

Galliformes

Class: Aves

Order: Galliformes

Number of families: 5 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

Galliformes are medium to large in size, with a stocky body, small head, and short wings. Quails are the smallest species, weighing less than 1 ounce (20 grams) and measuring just 5 to 6 inches (12 to 15 centimeters). The wild turkey weighs 17 to 22 pounds (8 to 10 kilograms), and the domesticated turkey bred for eating can weigh up to 44 pounds (20 kilograms). The green peafowl measures up to 98 inches (250 centimeters) in length.

Galliformes have short bills that usually curve downward to assist in pecking plant material from the ground. Their feet are big and strong—so strong that they can move heavy branches or stone. Some galliform tails are one-third the size of their total body length. Both sexes are often brown or black, but the males of a few species are incredibly colorful.

GEOGRAPHIC RANGE

Galliformes are found on every continent except Antarctica.

HABITAT

Gallinaceous birds enjoy a wide variety of habitats: forests, mountains, farmland, semideserts, and savannas (plant communities characterized by shrubs and low trees as well as grasses and herbs).

DIET

The chicken-like birds eat nuts, seeds, and parts of plants. Their large feet help them move branches and stones to

discover food other animals could not access. Chicks eat insects and larvae (LAR-vee; immature stage for some insects) during their first few weeks of life.

Galliformes regularly swallow small stones to help the digestive process. The rocks help break down nuts and seed coverings as well as the tough fibers that make up green vegetation. These birds don't drink much water, but a few species visit salt licks, where they eat clay soil that gives them required minerals.

BEHAVIOR AND REPRODUCTION

Social behavior varies among species. Many species are solitary (lone) or spend the year in pairs. Other species spend the nonbreeding season feeding together in larger groups.

Males are territorial. Because their vivid colorations make them easy to spot, some species move only when threatened, preferring to spend the majority of their time sitting still. Most species do not migrate. In fact, they rarely leave the area in which they were born. A few do migrate (travel seasonally from region to region), however.

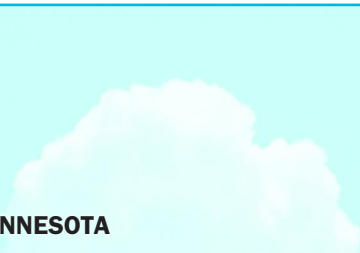
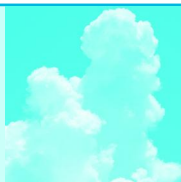
Galliformes are terrestrial (land-based) and are not built for long-distance flight. They are better equipped to make strong, short bursts of flight. When threatened, they are more likely to run away than fly. When they do take flight, most species cannot fly high above the ground.

Gallinaceous birds bathe by squatting in shallow pits and beating their wings. This dusts their feathers and removes parasites.

Breeding habits vary throughout the order. Those species in which there is little physical difference between the male and female tend to be monogamous (having just one mate), whereas those in which the males are more colorful are polygynous (one male, many females). Males have many physical traits used to attract females, including bright colors, shaped tail feathers, and other distinct markings. Some have combs (fleshy red crests on top of the head) and eyebrows. One family—the curassows—has a colorful knob on the beak that gets larger as the bird ages.

Vocalizations play an important role in courtship displays and territorial rituals. They are also used to communicate with a mate. In some species, the calls can be heard for up to 4 miles (6.4 kilometers).

The family known as megapodes do not need to sit on their eggs to incubate (keep warm for hatching to occur) them.



THE PLIGHT OF PHEASANTS IN MINNESOTA

According to a *Star Tribune* article written by Doug Smith in 2004, more than 220,000 Minnesota hunters shot one million pheasants each fall as recently as the 1960s. But throughout the four decades since, 100,000 Minnesota hunters bagged about one-third as many pheasants each year as in the 1960s. Why the drop in statistics? Intensive farming and wetland drainage have wiped out huge portions of pheasant habitat—mainly grasslands and wetlands. The birds simply aren't around to shoot.

Pheasants Forever, the only national conservation group based in the state, organized in 1982 with the hope of restoring and maintaining the pheasant population in Minnesota. Since it began, the organization claims to have spent about 14 million dollars to buy 150,000 acres (60,700 hectares) of habitat. Even so, the impact has been minimal.

Wildlife officials say federal farm programs and weather have much greater influence on pheasant populations than do habitat improvement and acquisition projects.

The male builds a large mound of sand or vegetation and digs into it. The female lays her eggs in the burrow, and it's up to the male to regulate the temperature of the nest, sometimes for up to eleven months until the egg hatches. In monogamous (muh-NAH-guh-mus) pairs, where each bird mates with just one other bird, both parents help care for the young.

For those species that do incubate their eggs with their own body heat, incubation time varies from seventeen days to four weeks. Clutch sizes vary from seven to twenty eggs.

Young are born with their eyes open, able to feed somewhat independently within a few hours of hatching. Hatchlings are born with colors aimed at helping them stay hidden, but those first downy feathers are replaced with brighter colors as the bird matures. Offspring leave their parents at around one year of age.

Predators include red foxes, striped skunks, chipmunks, squirrels, raccoons, snakes, and crows.

GALLIFORMES AND PEOPLE

As people turned from a hunter-gatherer society into a farming society, they began to domesticate several galliform species. Turkeys, chickens, and guineafowl continue to be an important

part of the human diet throughout the globe. The eggs of Galliformes are highly prized, as their high yolk content is a rich protein source.

Because Galliformes are sedentary, not very active, they are easy to shoot, which makes them the most popular hunting birds throughout the world. Every year, tens of millions of Galliformes are raised and released specifically for shooting purposes. In fact, many species have been introduced into other countries for purpose of sport or decoration. These introductions have proved to be a serious threat to the native bird populations, as is habitat destruction and degradation.

CONSERVATION STATUS

Of all the galliform species, 104 are considered Threatened, at risk of extinction, or Near Threatened, could become threatened. Those under the greatest threat are pheasants and partridges. One, possibly two, species has become extinct since 1600. Hunting for adults and eggs is a serious threat to these game birds. Conservation efforts are being made throughout the world to stabilize populations, but habitat destruction is the primary threat. Those species that depend on forests are in the most critical danger, as logging for timber and clear-cutting for agriculture is on the rise.

FOR MORE INFORMATION

Books:

Hegner, Mike, Chris Dorsey, and Greg Breining. *North American Game Birds*. Chanhassen, MN: Creative Publishing International, 2002.

Kaufman, Ken. *Kingbird Highway: The Story of a Natural Obsession That Got a Little Out of Hand*. New York: Houghton Mifflin, 2000.

Periodicals:

Smith, Doug. "Working for Wildlife; Pheasants: Forever or Not?" *Star Tribune* (May 3, 2004).

Web sites:

American Bird Conservancy. <http://www.abcbirds.org> (accessed on July 13, 2004).

"Galliformes." Earthlife. <http://www.earthlife.net/birds/galliformes.html> (accessed on June 1, 2004).

National Audubon Society. <http://www.audubon.org> (accessed on July 13, 2004).

MOUNDBUILDERS

Megapodiidae

Class: Aves

Order: Galliformes

Family: Megapodiidae

Number of species: 22 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Moundbuilders have big, strong legs and feet. The short bill curves downward, and most moundbuilders look like other galliforms (members of the order Galliformes) in body shape and dull coloring. There are a few species that have patterned plumage (feathers), but in these birds, the patterning helps conceal them from predators.

Moundbuilders weigh between 1.1 and 5.5 pounds (0.5 to 2.5 kilograms) and measure 11 to 27 inches (28 to 70 centimeters) in length.

GEOGRAPHIC RANGE

Primarily in Australia and New Guinea as well as on islands throughout the southeastern Pacific and Southeast Asia.

HABITAT

Moundbuilders must live in regions where climate conditions encourage the decomposition of organic matter, and so they prefer tropical and subtropical rainforests. Only the malleefowl and the Australian brush-turkey can be found in habitats outside the rainforest.

DIET

Most of what moundbuilders eat comes from the forest floor. These birds feed on fallen fruits, seeds, ants, scorpions, and even small snakes. Although most of this food gets eaten as the birds dig through forest leaf-litter, they do seek out specific types of food, fruit being one of these.



CAUGHT ON FILM

For the first time ever, the threatened Vanuatu (van-wah-TOO) megapode was captured on film by Dr. Mark O'Brien in December 2003. O'Brien, a researcher from the Royal Society for the Protection of Birds, had visited the Pacific nation of Vanuatu so that he could work with the chief in an effort to determine a way that islanders could still harvest eggs, but in a sustainable way.

According to a press release posted on Birdlife.org, only 2,500 pairs of Vanuatu megapodes remain, and only on the 108

islands of Vanuatu. As a result of O'Brien's visit, the chief initiated a conservation program that included a moratorium (temporary halt) on egg collection that lasted four months. Anyone disobeying the rule was fined \$135 or the equivalent in pigs or cattle. And because the species is rarer in the southeastern part of the nation, those communities agreed to a five-year ban on egg collection.

O'Brien acknowledged that another visit to Vanuatu is necessary to learn the effects of the moratorium.

BEHAVIOR AND REPRODUCTION

It's difficult to separate reproduction behavior from other behavior because nearly all aspects of life among moundbuilders revolve around their incubation (keeping eggs warm for hatching) methods. The moundbuilder family is vocal, and calls range from low-pitched and quiet to incredibly loud and wail-like.

Unlike other birds, moundbuilders do not use their body heat to incubate their eggs. Instead, they rely on solar radiation (on beaches), geothermal activity (from soil near volcanic areas), and the decomposition of organic matter (in mounds). Mounds consist of leaf-litter and soil, and adults constantly add fresh material to conserve moisture. Some species dig burrows rather than build mounds, and their eggs are incubated by the sun or geothermal sources (sand, soil). Clutch sizes range from twelve to thirty eggs each season and must incubate for forty-five to seventy days.

Moundbuilders lay their eggs in individual holes deep within the incubation site, and each chick hatches separately, without help from the parents. Chicks dig for two to fifteen hours to reach the surface, and they are completely independent at the

time of hatching. This means they leave the site, find food and water, recognize and avoid predators, animals that hunt them for food, and even regulate their own body heat upon birth.

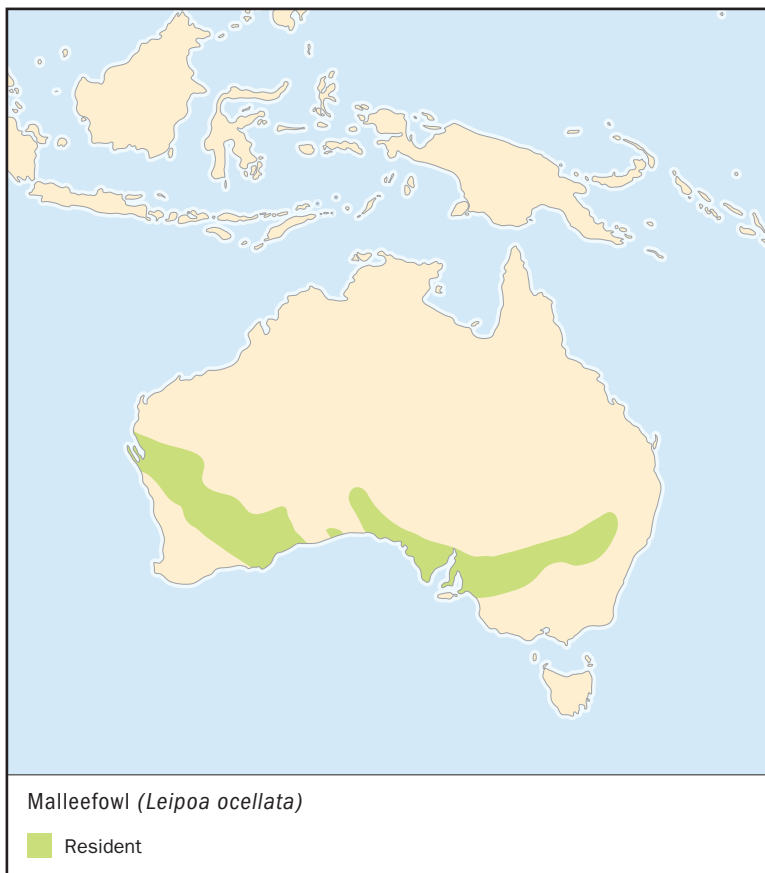
Some moundbuilders are monogamous (muh-NAH-guh-mus; having only one mate) while others are polygynous (puh-LIH-juh-nus; one male, several females). Predators include foxes, birds of prey, dingoes, and wild cats.

MOUNDBUILDERS AND PEOPLE

Humans have traditionally harvested the birds' eggs, which are rich in protein. Although native people have been harvesting eggs for thousands of years, the recent human population growth has proven to be more than the moundbuilder population can sustain, and overharvesting has become a serious problem.

CONSERVATION STATUS

Almost half of the twenty-two species face some level of threat. Six species are listed as Vulnerable by the IUCN, facing a high risk of extinction, dying out, while one is Critically Endangered, facing an extremely high risk of extinction, and another two are Endangered, facing a very high risk of extinction. One species is Near Threatened, at risk of becoming threatened. The main reasons for threat include habitat loss, overharvesting of eggs, and predation by introduced animals.



MALLEEFOWL *Leipoa ocellata*

SPECIES ACCOUNTS

Physical characteristics: Both sexes grow to be around 23.6 inches (60 centimeters) long. Males weigh 4 to 5.5 pounds (1.8 to 2.5 kilograms) while females weigh 3.3 to 4.5 pounds (1.5 to 2 kilograms). Upperparts have a distinct stripe pattern of white, black, and gray. Stripes are made up of spots that resemble eyes, which help to ward off predators.

Geographic range: Found in Australia, primarily in the southern states. Recently rediscovered in the deserts of central Australia.

Habitat: Malleefowl live among eucalyptus (yoo-kah-LIP-tus) trees and the spiny, shrub-like acacia (uh-KAY-shah) woodlands.

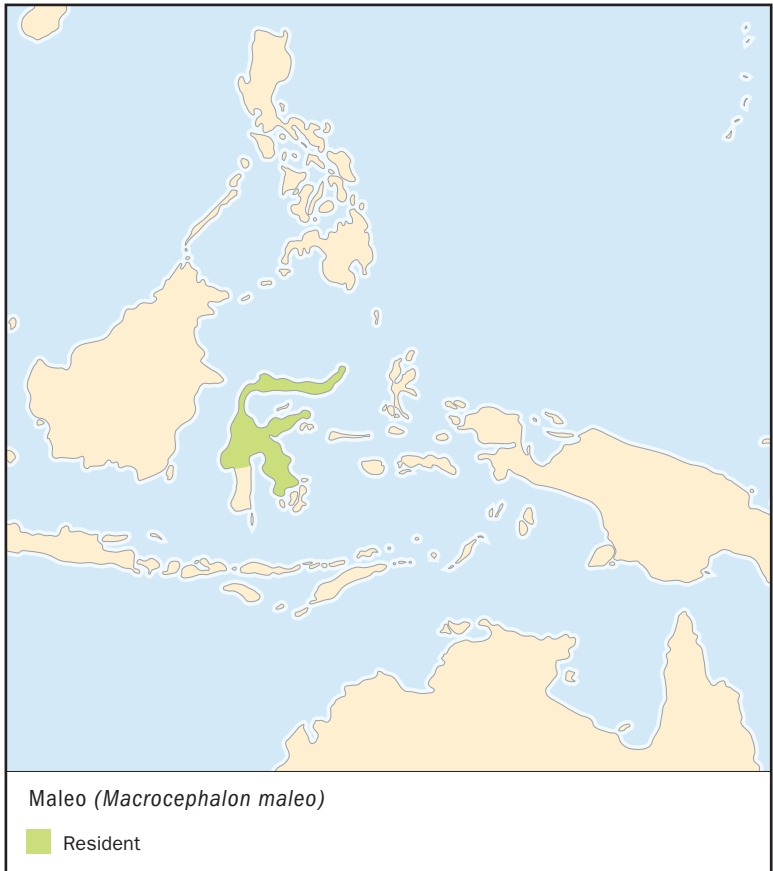
Diet: The malleefowl feed on plants, especially seeds and fruits. About 20 percent of their diet is comprised of ground-dwelling invertebrates (animals without backbones). They'll drink water if it's available, but don't require it.

Behavior and reproduction: Malleefowl are territorial and pairs will defend their incubation mound. Despite being monogamous, they are solitary (lone) birds, and males will remain near the mound while females wander. These birds rarely fly, but they roost (rest) in the safety of trees.

Malleefowl are ready to mate between the ages of two to four years, and they continue breeding until the age of twenty years or so. Males spend up to eleven months each year building the incubation mounds and tending to them. One mound is used for numerous generations. Females lay two to thirty-four eggs at intervals of two to seventeen days, depending upon the weather. The drier the season, the longer the laying time between eggs. Incubation lasts fifty-five to seventy-seven days, depending on the temperature of the mound. Male malleefowl determine mound temperature by dipping their beaks into the mound. Malleefowl live to be about thirty years old. Foxes and wild cats are the primary predators, and the mortality rate of eggs is very high.

Malleefowl and people: Wheat farming encroaches upon the habitat of the malleefowl, and sheep grazing threatens the malleefowl's food sources.

Conservation status: Classified as Vulnerable due to habitat destruction and the predation of introduced animals. ■



MALEO

Macrocephalon maleo

Physical characteristics: Maleos grow to 21.7 inches (55 centimeters) long. Females weigh slightly more (3.3 to 3.9 pounds, or 1.5 to 1.8 kilograms) than males (2.9 to 3.5 pounds, or 1.3 to 1.6 kilograms). This large bird has deep black upperparts and underparts that are white tinged with pink. The head is topped with a black “helmet.”

Geographic range: The maleo is found on Sulawesi in Indonesia.

Habitat: Maleos live in tropical forests as well as plantations.

Diet: The maleo feeds on a variety of fruits and seeds. Also eats cockroaches and other invertebrates found on the forest floor.



Rather than building a mound out of the soil, the maleo burrows or tunnels into the soil. (Illustration by Dan Erickson. Reproduced by permission.)

Behavior and reproduction: The maleo is a shy bird. Monogamous pairs will not leave each other and will defend their burrows from other pairs.

Rather than building a mound out of the soil, this species burrows or tunnels into the soil. Both sexes participate in burrowing and tending to the site. Eggs are laid 4 to 40 inches (10 to 100 centimeters) deep, with ten to twelve days in between each egg. Eggs are five times the size of chicken eggs.

Maleos and people: Natives of Sulawesi have harvested maleo eggs for centuries.

Conservation status: Classified as Vulnerable due to population decline. The increase in human population has caused overharvesting of maleo eggs. ■

FOR MORE INFORMATION

Books:

Jones, Darryl N., et al. *The Megapodes: Megapodiidae*. Oxford, U.K.: Oxford University Press, 1995.

Periodicals:

"Megapode Captured On Film for First Time." *BirdLife International* (December 19, 2003). Online at http://www.birdlife.org/news/news/2003/12/vanuatu_megapode.html (accessed on June 2, 2004).

Web sites:

“Craciformes.” Earth Life. <http://www.earthlife.net/birds/craciformes.html> (accessed on June 2, 2004).

“Mallee Fowl.” Earth Sanctuaries Limited. <http://www.esl.com.au/malfowl.htm> (accessed on June 2, 2004).

“The Malleefowl.” Malleefowl Preservation Group. <http://www.malleefowl.com.au/Malleefowl.htm> (accessed on June 2, 2004).

family CHAPTER

CURASSOWS, GUANS, AND CHACHALACAS

Cracidae

Class: Aves

Order: Galliformes

Family: Cracidae

Number of species: 50 species

PHYSICAL CHARACTERISTICS

Length in the cracids (members of the family Cracidae) varies from 16.5 to 36.2 inches (42 to 92 centimeters) and weight is 0.8 to 9.5 pounds (0.4 to 4.3 kilograms). The slim birds are long-legged with short, rounded wings and long tails. Though short, the beak is strong and lightly curved. The feet are similar to those of moundbuilders, with well-developed toes. Plumage (feathers) is black or olive brown to reddish brown, and white marks are scattered throughout. Male curassows of many species have a fleshy knob on the root of the beak or brightly colored areas of naked skin on the head.

GEOGRAPHIC RANGE

These birds are found in south Texas through tropical South America as far as central Argentina. United States is home to only one species, whereas Colombia and Brazil harbor twenty-four and twenty-two species, respectively.

HABITAT

Cracids live in tropical forest regions, plantations, and forested areas where there is a second, lighter growth of vegetation. Although most species prefer the warmth of lowlands, some do live in mountain forests of altitudes above 9,800 feet (3,000 meters).

DIET

Though mainly plant eaters, cracids also feed on insects and other small animals. They enjoy berries and small fruits whole,

phylum

class

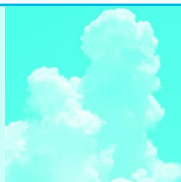
subclass

order

monotypic order

suborder

▲ family



WHAT'S SO GREAT ABOUT RAINFORESTS?

Aside from many species of cracids, thousands of other animals live in the tropical rainforests. In fact, half of all the known animals in the world today live in the rainforest. And we're always hearing about the importance of rainforest conservation. What makes the rainforest so special?

Rainforests are home to so many diverse species because these forests are the oldest living ecosystems on the planet. Having escaped the effects of the Ice Age, some rainforests have been around for one hundred million years! When the Ice Age wiped out other living systems, the rainforest continued to thrive, so every living organism within also kept reproducing and evolving. Today, some rainforest species number in the millions.

Though you won't find jungle cats or large animals in the rainforest, it is host to a mind-boggling fifty million species of invertebrates. On a single tree alone in Peru, one scientist found more than fifty different species of ants. Despite these impressive statistics, experts estimate that 137 species of life forms become extinct *every day* in the rainforests, mostly due to logging and cattle ranching.

Like any ecosystem, the rainforest inhabitants have developed so that they depend upon one another for survival. When one species is removed from the system, the effect is ripple-like, and virtually all other species must adapt. In addition to animal life, the rainforest is home to numerous plant species that we have only just begun to recognize as having medicinal use.

but will bite into bigger fruit such as guavas and mangoes. They also eat seeds, soft leaves, and buds. Unlike other Galliformes, cracids won't scratch the forest floor for their food.

BEHAVIOR AND REPRODUCTION

We don't know much about cracid life because they are such shy birds. They seem to live socially in small groups or flocks, and their nests are found in groups. They are vocal birds whose calls are loud and cacophonous (having an unpleasant sound). Some of the mountain forest-dwelling species migrate to lower altitudes during the colder months.

Cracids build their nests in trees or bushes. The nest is a flat platform, usually longer than it is wide and built from twigs, plant stems, leaves, grass, and other similar items. Some of the species are polygamous (puh-LIH-guh-mus; having several

mates in one season), but no one is certain about the others. Curassow hens lay two eggs; chachalacas, three; and guans, three to four. Experts believe that only the female incubates (keeps warm before hatching) the eggs. Incubation periods vary from twenty-one to thirty-six days, depending on species.

Newborns are able to leave the nest very soon after birth. They are able to fly, hop, and walk along twigs when just a few days old. Cracids spend a great deal of time in the trees, hopping from branch to branch and walking on twigs. Cracids fall prey to jaguars and other big cats.

CURASSOWS, GUANS, CHACHALACAS AND PEOPLE

Hunters in Latin America value cracids as a rich protein source. However, because the reproduction rate of cracids is so slow, the population cannot withstand intensive hunting pressure. Cracids are greatly affected by habitat destruction. Native tribes use tail and wing feathers for ornamentation.

CONSERVATION STATUS

Cracids are more threatened than any other bird family in the Americas. Twenty-three of the fifty species are threatened with extinction, or close to being threatened with extinction, including 64 percent of curassows (nine species) and 16 percent of the chachalacas (two species). About 50 percent of guans are threatened (twelve species). Primary threats are overhunting and habitat loss.

SPECIES ACCOUNTS



PLAIN CHACHALACA *Ortalis vetula*

Physical characteristics: The plain chachalaca weighs 15.5 to 28 ounces (440 to 794 grams) and measures 19 to 22.8 inches (48 to 58 centimeters) long. Coloration is olive-brown.

Geographic range: This species is found in Texas, Mexico, and Costa Rica.

Habitat: Plain chachalacas live in lowland forests as well as forests at the base of mountains in Central America. They also dwell in scrub and tall brush vegetation.

Diet: The bulk of their diet is made up of fleshy fruit. They also eat green leaves, shoots, and buds as well as twigs and some insects. Though chachalacas live mostly in trees, they descend to the ground for feeding.



Behavior and reproduction: This social bird has a distinct “cha cha lack, cha cha lack” call which nearby chachalacas sing in chorus. Most humans find it an unpleasant sound.

Nests are built 3.3 to 33 feet (1 to 10 meters) off the ground in trees. Females lay two to four eggs and incubate them for about twenty-five days.

Plain chachalacas and people: Humans may eat plain chachalacas.

Conservation status: These birds are not threatened. ■

Plain chachalacas live mostly in trees, but come to the ground for feeding. (Erwin and Peggy Bauer/Bruce Coleman Inc. Reproduced by permission.)



BLACK GUAN *Chamaepetes unicolor*

Physical characteristics: Black guans weigh 2.4 to 2.6 pounds (1.1 to 1.2 kilograms) and measure 24 to 27 inches (62 to 67 centimeters) long. The male is entirely black except for a bare blue patch on his face.

Geographic range: Found in western Panama and in Costa Rica.

Habitat: Black guans are found in mountain forests above 3,300 feet (1,000 meters) in southern Central America.

Diet: They eat mostly fruit, but also seeds and some plants. Black guans feed alone, in pairs, or in small groups.

Behavior and reproduction: Outside the breeding season, black guans live alone. They pair off during the breeding season. Females lay two to three eggs and are responsible for incubation (sitting on the eggs).

Black guans and people: There is no known interaction between black guans and humans.

Conservation status: Listed as Near Threatened, not currently threatened, but could become so, by the IUCN due to habitat destruction. ■



Black guans live alone, except for the breeding season, during which they pair off. (Illustration by Brian Cressman. Reproduced by permission.)



WATTLED CURASSOW

Crax globulosa

Physical characteristics: This curassow weighs about 5.5 pounds (2.5 kilograms) and measures 32.2 to 35 inches (82 to 89 centimeters) long. The male is black with a white belly and a red globe-like ornamentation above and below the bill. The female has reddish brown belly feathers and a red fleshy area between the beak and face.

Geographic range: The wattled curassow is found from Colombia and western Brazil to Bolivia.

Habitat: This bird prefers the tropical rainforest in the Amazon basin. It rarely leaves the trees except to breed..

Diet: Wattled curassows feed on vegetation and small invertebrates (animals without backbones).

Behavior and reproduction: The wattled curassow whistles softly for four to six seconds at a time. Nothing is known about this bird's reproductive habits in the wild. In captivity, the female lays two eggs.

Wattled curassows and people: These birds are hunted for food, often to the detriment of the bird population.

Conservation status: Listed as Vulnerable, facing a high risk of extinction, by the IUCN. Humans rarely see wattled curassows not only because of the patchy distribution of the species, but because it lives primarily in higher altitudes where there are fewer people. The main threat to the wattled curassow is overhunting. ■

FOR MORE INFORMATION

Books:

Brooks, Daniel M., and Stuart D. Strahl. *Cracids: Status Survey and Conservation Action Plan for Cracids 2000–2004*. Gland, Switzerland: IUCN, 2001.

Kricher, John. *A Neotropical Companion*, 2nd ed. Princeton, NJ: Princeton University Press, 1999.

Web sites:

"About Rainforests: Tropical Rainforest Animals." Kid's Corner, Rainforest Action Network. http://kids.ran.org/kidscorner/rainforests/s06_animals.html (accessed on June 2, 2004).

"Plain Chachalaca." Animals Online. http://www.animals-online.be/birds/hokkos/plain_chachalaca.html (accessed on June 2, 2004).

"Plain Chachalaca." ENature. <http://www.enature.com/fieldguide/showSpeciesRECNUM.asp?recnum=bd0640> (accessed on June 2, 2004).



Wattled curassows live in tropical rainforests in the Amazon River basin. They spend most of their time in the trees, and come down just for breeding. (Illustration by Brian Cressman. Reproduced by permission.)

GUINEAFOWL

Numididae

Class: Aves

Order: Galliformes

Family: Numididae

Number of species: 6 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

These chicken-like birds weigh 1.5 to 3.5 pounds (0.7 to 1.6 kilograms) and measure 15.5 to 28.2 inches (40 to 72 centimeters) long. Their bills are short and their legs are strong. Some have small spurs on their legs, while others have a long, sharp spur on each leg. Still others have none at all. The tail is short and points downward. Some guineafowl have wattles that hang from the bottom of their bills. Males are generally larger than females.

Plumage (feathers) varies in color, from black with a brown wave design to black with white wavy lines or white spots. The head is usually bare for the most part, with small patches of feathers on some species. Skin color on the head varies.

GEOGRAPHIC RANGE

Guineafowl are native to Africa and Madagascar.

HABITAT

Though primarily found in rainforests, some guineafowl live in open-country habitats other than the desert, such as grasslands and plains with thickets and brush. Others prefer secondary forests, which are forests that grow after a major disturbance such as logging or fire occurs.

DIET

Some guineafowl eat small invertebrates (animals without backbones) and a variety of plants. Others also eat berries and



COST-EFFECTIVE DISEASE CONTROL

Guineas were first introduced to the United States from Africa during pre-Civil War days and have since been raised on small farms, usually alongside chickens and other domestic fowl. They're popular birds on farms because of the way they call loudly in alarm whenever intruders approach, be they four-legged or two-legged. More recently, they have become valued farm birds because they eat ticks that carry Lyme Disease.

According to Nancy Smith's article in *Mother Earth News*, guineas not only eat

the insects, but will actually patrol the borders of fields and lawns in search of the pesky bugs.

Owners of guineafowl praise the birds for their low-maintenance lifestyle and hardiness against disease, but the fowl do have their downside. Neighbors don't usually care for the alarmingly loud calls of the guineafowl. They're also slow breeders when compared to other fowl, such as chickens. Still, most people who own them say they would never be without them again.

other fruit in trees as well as bulbs dug up from underground. Flocks will crowd each other in order to eat, but they don't fight with their bills during feeding. Most species need to drink water to thrive.

BEHAVIOR AND REPRODUCTION

Guineafowl live in groups of up to twenty individuals, with the exception of the vulturine guineafowl, which live in flocks of twenty to thirty). These birds roost (rest) in trees during the night and call to one another. Calls vary according to species and are used not only to locate flock members but to warn of intruders. The crested guineafowl has been known to socialize with vervet monkeys. While the monkeys eat from the treetops, the guineafowl feed below on fruit and feces that fall from the trees. Monkeys help protect the birds by warning of danger from above while the birds warn monkeys of danger on the ground. Feeding usually occurs in the early dawn hours.

During breeding, pairs form monogamous (muh-NAH-guh-mus; one male to one female mate) bonds and breed throughout the year. Clutch sizes vary from as few as seven to as many as twenty-three eggs of various colors. Chicks are born with a soft

down covering and can usually flutter-fly by the age of two to three weeks.

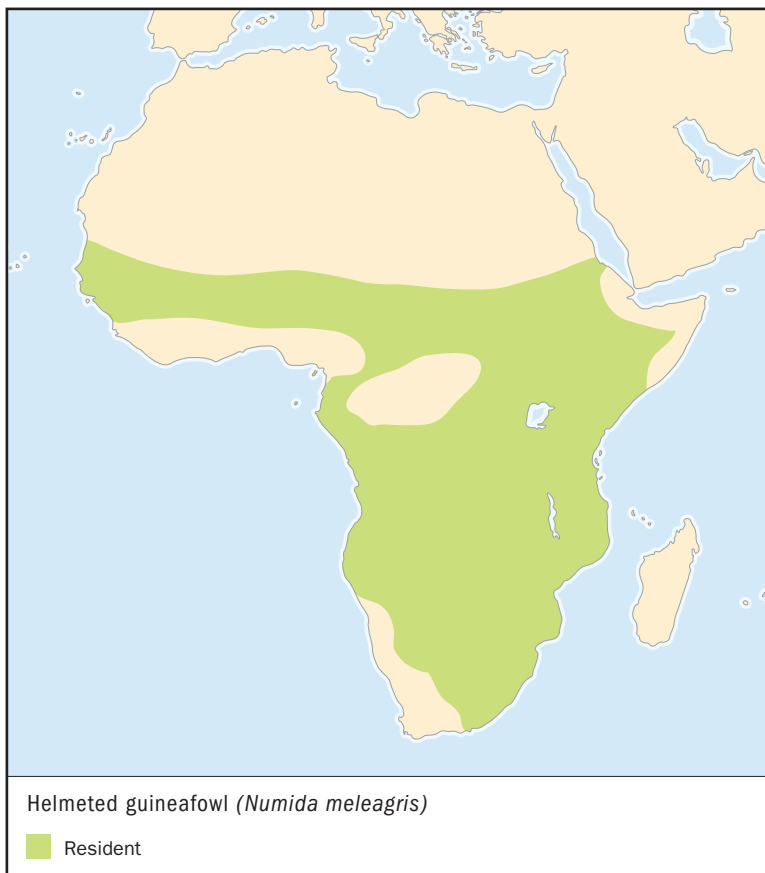
Guineafowl hide from their predators in trees and thickets. They also will choose to run rather than fly when in danger. Their primary enemies are hawks, owls, and other meat-eating animals. Average life span is unknown.

GUINEAFOWL AND PEOPLE

Guineafowl have been domesticated (tamed) and are a popular “pet” bird known for their ability to keep Lyme disease at bay by eating the ticks that carry it.

CONSERVATION STATUS

The white-breasted guineafowl is listed as Vulnerable, facing a high risk of extinction, due to hunting and habitat destruction. No other species are threatened.



HELMETED GUINEAFOWL

Numida meleagris

SPECIES ACCOUNT

Physical characteristics: The helmeted guineafowl measures 20 to 25 inches (50 to 63 centimeters) long and weighs 2.5 to 3.5 pounds (1.15 to 1.6 kilograms). Males and females are not noticeably different in size. Plumage is mostly blackish gray with white spots and lines. Head ornamentation varies.

Geographic range: This bird is found in Africa south of the Sahara; one population found north of the Sahara.

Habitat: This guineafowl lives on savannas (tropical and subtropical plant community with some trees and shrubs among grasses and herbs) and in woodlands.

A dust bath (rolling in dust) can help keep parasites off of birds such as helmeted guineafowls. (© Kenneth W. Fink/Photo Researchers, Inc. Reproduced by permission.)



Diet: Helmeted guineafowl find food by pecking into the ground. Their diet consists of 90 percent insects, but also includes berries, seeds, and reptiles. They will eat whatever plants are abundant.

Behavior and reproduction: This guinea is extremely vocal and social. Females make a call that sounds like “Buckwheat!” It lives in flocks of up to thirty-five but sometimes feeds in flocks of up to 1,000. Roosts from sunset to sunup. This species can run up to 20 miles (32.2 kilometers) daily.

Pairs mate for life. The female lays twelve to twenty-three eggs, which she will incubate (keep warm for hatching) for twenty-four to twenty-seven days. The nest is a shallow hole in the ground protected by vegetation. Both parents feed and care for chicks. This guinea’s breeding schedule corresponds with rainfall patterns.

Helmeted guineafowl and people: Southern Africa’s most popular land gamebird, bird hunted for sport. First domesticated by the ancient Egyptians.

Conservation status: Not threatened, but there has been a recent decline in parts of its range, most likely due to loss of habitat. ■

FOR MORE INFORMATION

Books:

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Sibley, David Allen, Chris Elphik, and John B. Dunning, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Knopf Publishing Group, 2001.

Periodicals:

Smith, Nancy. "Go Ahead, Get Guineas!" *Mother Earth News* (October 1, 2003).

Web sites:

"Guinea Fowl." Honolulu Zoo. <http://www.honoluluzoo.org/guineafowl.htm> (accessed on June 9, 2004).

"Helmeted Guineafowl." Kenya Birds. http://www.kenyabirds.org.uk/h_gfowl.htm (accessed on June 9, 2004).

FOWLS AND PHEASANTS

Phasianidae

Class: Aves

Order: Galliformes

Family: Phasianidae

Number of species: 179 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Fowls and pheasants measure 6 to 48 inches (15 to 125 centimeters) and weigh 1.5 to 24.2 pounds (0.7 to 11 kilograms). All species have a heavy, round body. Legs and neck are short, head and tail are small (except in a few long-tailed species), and facial ornamentation varies. Coloration of skin and plumage (feathers) also varies, but males are almost always the more colorful sex.

GEOGRAPHIC RANGE

Fowls and pheasants are found throughout North America, Europe, Asia, Africa, and Australasia.

HABITAT

Habitats vary widely for these birds. Some live in mountain regions, others in subtropical forests and rainforests. Still others prefer the grasslands.

DIET

Fowls and pheasants eat vegetation, buds, pine needles, roots, bulbs, seeds, fruits, invertebrates (animals without backbones) such as ants and termites, and berries. Baby snowcocks eat legumes (peas, beans, and lentils).

BEHAVIOR AND REPRODUCTION

Regardless of species, the daily routine of these birds is basically the same. They roost (rest) in trees during the night and descend at dawn for some serious feeding time. After eating for a few hours, they head for cover. The end of the day brings

about another feeding frenzy, after which birds call to one another as they prepare to roost for the night.

Because these birds are largely land dwellers, most species don't migrate (travel seasonally from one region to another) much. Species that live in the open grasslands are more social than their forest cousins, possibly to defend themselves against predators. Those social species can be found in flocks of twenty to one hundred individual birds.

Nests are shallow scrapes in the ground, lined with little vegetation and hidden by grasses or rocks. Clutch sizes can be as high as twenty eggs or as few as one. Incubation (keeping warm until hatching) is done by the female, and chicks leave the nest as soon as they hatch. First flight is taken in seven to ten days. Females are ready to mate at one year of age, but males tend to wait until their full adult colors have developed, usually in their second season.

Predators include foxes, ravens, badgers, coyotes, skunks, raccoons, hawks, owls, cats, dogs, and other medium-sized meat-eaters.

FOWLS AND PHEASANTS AND PEOPLE

Phasianidae is arguably the most important bird family to the human population because they are hunted in the wild and raised domestically for their meat and feathers.

CONSERVATION STATUS

Seventy-three species (41 percent of all species) are included on the 2003 IUCN Red List of Threatened Species.



TURKEY TRIVIA

- Ben Franklin wanted the wild turkey to be the national bird, not the bald eagle.
- Despite being so huge, turkeys roost in trees at night.
- Turkeys “dust off” their feathers by rolling in ant hills and decayed logs.
- Male turkeys have beards.
- Forty-nine states have spring wild turkey hunting seasons (Alaska doesn't have any wild turkeys).
- Wild turkeys can run up to 12 miles per hour (19.3 kilometers per hour) for short distances.
- They can fly at 55 miles per hour (88.5 kilometers per hour) for short distances.
- Turkeys see in color.
- Turkeys have heart attacks, as was proven when the U.S. Air Force was doing test runs to break the sound barrier. Wild turkeys nearby dropped dead.

SPECIES ACCOUNTS



WILD TURKEY *Meleagris gallopavo*

Physical characteristics: Weighs 6.6 to 24.2 pounds (3 to 11 kilograms) and measures 30 to 49 inches (76 to 125 centimeters), with males larger than females. Females are dull in color, but males have bare blue and pink heads, red wattles, and dark plumage with metallic green and bronze highlights. Legs are pink.

Geographic range: Found in Mexico and the United States from Vermont to Florida and west to Washington, Oregon, and California.

Habitat: Though the wild turkey prefers a mix of hardwood forest and grassland, it can survive tropical forest and scrub areas.

Diet: The wild turkey eats leaves, shoots, seeds, buds, fruits, berries, grains, insects, spiders, and sometimes small vertebrates (animals with backbones). It searches for food by picking at the ground.

Behavior and reproduction: Wild turkeys live on home ranges that sometimes overlap. Each range has a male hierarchy as well as a female hierarchy, with the strongest of each sex at the top. They're vocal birds and have a wide variety of calls.

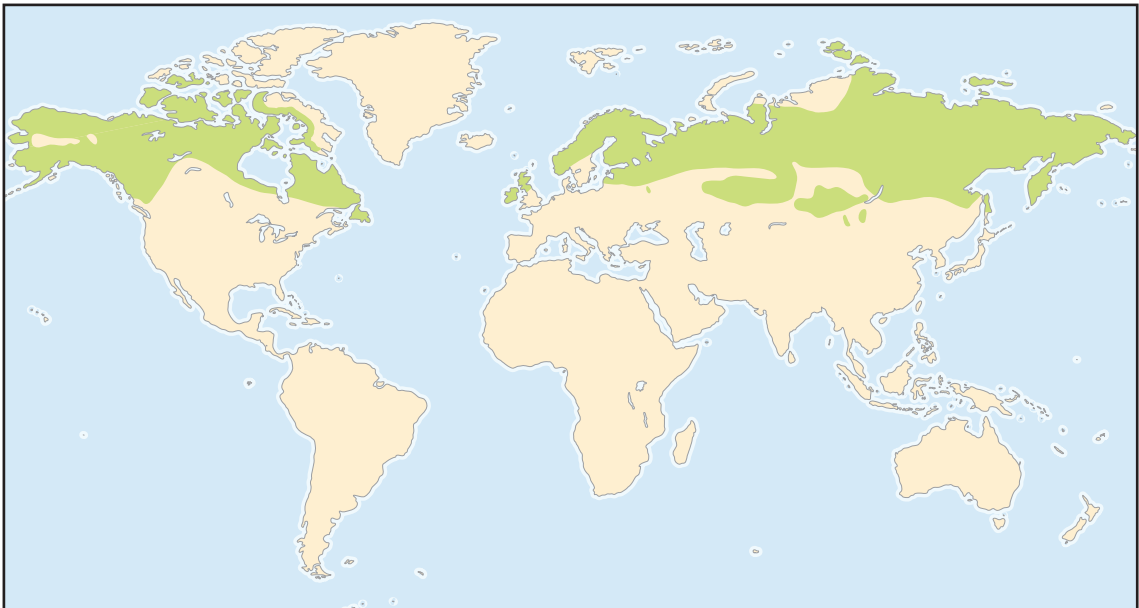
These birds are polygamous (puh-LIH-guh-mus; one male has several female mates). Mating takes place in the spring, and courtship includes strutting and gobbling by the males. Clutch sizes range from eight to fifteen eggs, and females incubate them for twenty-seven to twenty-eight days. Chicks fly for the first time between six and ten days, and they remain with the mother until the springtime. Predators include bobcats, foxes, and great horned owls.

Wild turkeys and people: These are popular game birds. Towns across America have turkey-calling contests.

Conservation status: Overhunting reduced the population dramatically in the early twentieth century, but careful conservation and management have successfully restored numbers. ■



Wild turkeys are vocal—they have a variety of calls that they use. Males gobble during courtship, the time before mating when they attract mates. (John Shaw/Bruce Coleman Inc. Reproduced by permission.)



Willow ptarmigan (*Lagopus lagopus*)

■ Resident

WILLOW PTARMIGAN

Lagopus lagopus

Physical characteristics: Small grouse weighing 0.9 to 1.8 pounds (0.4 to 0.8 kilograms) and measuring 14 to 17 inches (36 to 43 centimeters). Males have a rust-colored head and upperparts and a bright red “comb” over the eyes that is larger in spring and summer. Females are a little smaller than males, and both sexes are completely white in winter except for a black tail. Feet are covered in feathers, which helps them walk on snow.

Geographic range: The willow ptarmigan (TAR-mih-gun) is found in northern Asia and Europe, from Alaska into Canada.

Habitat: This bird prefers the tundra (treeless plain of arctic and subarctic regions) and the forest’s edge as well as moist areas like pond edges and arctic valleys. Likes willow trees.

Diet: This species eats flowers, buds, and insects in the summer, willow and birch buds and twigs in winter, and berries in the fall.

Behavior and reproduction: Willow ptarmigans often sleep in snowbanks in winter, which they get to by flying, rather than walking, so as not to leave tracks for predators to follow. They live in large groups of both sexes in winter. Males are territorial in the spring and vocalize to set boundaries.

The willow ptarmigan is monogamous (muh-NAH-guh-mus; having just one mate) and each pair has its own territory. Nesting starts anywhere from April to June, depending on the latitude. The female lays eight to eleven eggs and incubates them for twenty-two days. Males keep newly hatched chicks warm. Chicks fly at the age of ten to twelve days. Families stay together until the fall.

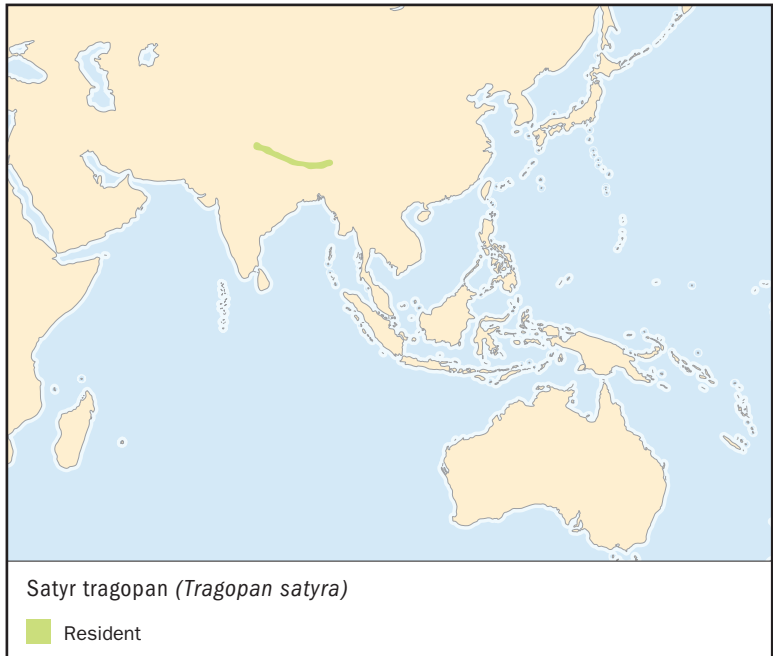
Willow ptarmigans are hunted by foxes, martens, lynx, and wolves.

Willow ptarmigans and people: Popular hunting birds in the United Kingdom, Scandinavia, Finland, and Russia. Hunted in the United States and managed so that populations are sustainable. The willow ptarmigan is the Alaska state bird, and is the focus of stories, toys, and art in arctic cultures.

Conservation status: This bird is not threatened. ■



Willow ptarmigans are reddish during the summer, and turn white for the winter, except for a black tail. The colors help them blend in with their environment during the different seasons. (© JLM Visuals. Reproduced by permission.)



SATYR TRAGOPAN

Tragopan satyra

Physical characteristics: Weighs 2.2 to 4.6 pounds (1 to 2.1 kilograms) and measures 22 to 28 inches (57 to 72 centimeters). Females are slightly smaller than males. Males have dark red underparts with blue facial skin. Brown plumage covers the lower back and rump.

Geographic range: The satyr tragopan lives in the central and eastern Himalayas.

Habitat: This bird lives in mountain forests at altitudes ranging between 5,900 and 14,100 feet (1,800 and 4,300 meters).

Diet: Eats bulbs, roots, and leaves as well as insects, sprouts, and seeds.

Behavior and reproduction: Unlike most pheasants, the satyr tragopan spends a great deal of time in the trees, and is most active during the day. Reported to be shy in the wild, these birds live in pairs or sometimes larger family groups. Males vocalize in what is



The male satyr tragopan has a brightly colored “bib” that he expands during the breeding season to attract a mate. (Illustration by Emily Damstra. Reproduced by permission.)

considered to be a wail at dawn from April to June, a sign that breeding season is about to begin.

These birds are monogamous. Nests are made of sticks as high as 20 feet (6 meters) in trees. Clutch size is two to three eggs, and they are incubated for twenty-eight days.

Satyr tragopans and people: Himalayan forest conservation campaigns use this bird as a central figure.

Conservation status: Not currently listed as threatened by the IUCN. The satyr tragopan is still hunted in Nepal. ■

FOR MORE INFORMATION

Books:

Green-Armitage, Stephen. *Extraordinary Pheasants*. New York: Harry N. Abrams, 2002.

Madge, Steve, et al. *Pheasants, Partridges, and Grouse: A Guide to the Pheasants, Partridges, Quails, Grouse, Guinea fowl, Buttonquails, and Sandgrouse of the World*. Princeton, NJ: Princeton University Press, 2002.

Web sites:

“Gobble, Gobble, Gobble.” Wisconsin Department of Natural Resources. <http://www.dnr.state.wi.us/org/caer/ce/eeek/critter/bird/wildturkey.htm> (accessed on June 9, 2004).

"Ptarmigans." Hinterland's Who's Who. <http://www.hww.ca/hww2.asp?pid=1&id=64&cid=7> (accessed June 9, 2004).

"Satyr-tragopan." Brno Zoo. http://www.zoobrna.cz/english/galery/gal_satyr_e.htm (accessed on June 9, 2004).

"Wild Turkey." Bowhunting. <http://www.bowhunting.net/NAspecies/nasturk2.htm#top> (accessed on June 9, 2004).

"Wild Turkey." The Waldron Village News. http://www.waldronmi.com/wildlife/wild_turkey.htm (accessed on June 9, 2004).

"Willow Ptarmigan." NatureWorks. <http://www.nhptv.org/natureworks/willowptarmagin.htm> (accessed on June 9, 2004).

family CHAPTER

NEW WORLD QUAILS

Odontophoridae

Class: Aves

Order: Galliformes

Family: Odontophoridae

Number of species: 32 species

PHYSICAL CHARACTERISTICS

These small birds have plump bodies and short wings. They weigh 4 to 16 ounces (125 to 465 grams) and measure 7 to 15 inches (17 to 37 centimeters). Males are slightly larger and, in some species, have slightly more dramatic plumage (feather) coloring. Many species have red rings around the eyes, and some have crests on their heads ranging from tiny tufts of hair to long feathers. Quail bills have serrated (sharply notched) edges. Legs are strong to help in running, digging, and scratching.

GEOGRAPHIC RANGE

New World quails are native to North, Central, and South America, though they have been introduced elsewhere.

HABITAT

New World quails occupy a vast array of habitats. Bobwhites live in ranges from grassland to woodland edge while other species prefer the desert. Others are found in mountain, tropical, and subtropical forests. Quail often make their homes on agricultural land.

DIET

New World quails scratch for seeds from grasses, trees, and shrubs. Those who live on agricultural land eat leftover grain seeds as well as corn, wheat, peanuts, and black bean crops. Those birds in tropical forests dig for plant roots, and some species feed on bulbs. Chicks eat mostly invertebrates (animals without backbones).

phylum

class

subclass

order

monotypic order

suborder

▲ family

BEHAVIOR AND REPRODUCTION

Nearly every species of New World quail forms coveys (KUH-veez; small flocks). Though experts once thought coveys were family units, it is now believed that covey members are adult pairs as well as helpers from previous clutches (number of birds hatched at one time).

These birds are most active during the day and spend the majority of their time on the ground. Some forest species roost (rest) in trees. Although none of these quail are migratory (travel seasonally from region to region), those that live in mountain regions may move to different altitudes with the seasons.

New World quails call and whistle to each other, with the bobwhite having the most varied calling habits. Predators include birds of prey, weasels, and foxes. Skunks, raccoons, snakes, coyotes, and possums prey on quail eggs.

Reproduction of the quail has not been studied in depth. Though they were once believed to be monogamous (muh-NAH-guh-mus; have only one mate), evidence is proving that theory wrong. At least with the bobwhite, it seems the mating system is flexible, and the birds alternate between monogamy, polygyny (puh-LIH-juh-nee; one male to several females), polyandry (PAH-lee-an-dree; one female to several males), and promiscuity (prah-MISS-kyoo-ih-tee; indiscriminate mating where individuals mate with as many other individuals as they want).

Clutch size varies with the species, with tropical and forest birds having smaller clutches of three to six eggs. Nests are bowl-like and built on the ground. Sometimes vegetation is used to cover the nest for safety purposes. Though not well described for many species, incubation (warmth sufficient for hatching) takes sixteen to thirty days. Chicks are able to leave the nest within hours of hatching and begin to fly in less than two weeks. Twenty to fifty percent of all chicks die from predation.

NEW WORLD QUAILS AND PEOPLE

Most species are hunted for sport or food.

CONSERVATION STATUS

Conservation status varies. Those living in mild-weather regions and grasslands are common and not threatened. Forest species also seem to adapt well to human impact and are maintaining their populations. The status of the Latin American

species is difficult to assess because research into their status has been minimal. The bearded woo-partridge, for example, was considered Critically Endangered, facing an extremely high risk of extinction, in 1995 but has been recategorized as Vulnerable, facing a high risk of extinction, due to the discovery of several small and separate populations.

SPECIES ACCOUNT



NORTHERN BOBWHITE QUAIL *Colinus virginianus*

Physical characteristics: This is one of the smaller Galliformes, weighing just 4 to 8 ounces (129 to 233 grams) and measuring a mere 8 to 10 inches (20 to 25 centimeters). Females are smaller than males. Adult males have white throats and stripes on their faces; females have cream-colored faces and throats. Wings of the males also have distinct black markings which females lack.

Geographic range: Found from southern New England west through Ontario, Canada to southeastern Minnesota. Found also in eastern Florida and Wyoming, western Kansas, and Oklahoma southward throughout parts of Mexico. Introduced species are found on



Caribbean Islands, Washington, Oregon, Hawaii, British Columbia, New Zealand, Italy, Germany, and Cuba.

Habitat: Rather than pure grassland, the northern bobwhite prefers pine savannas (tropical or subtropical plant communities characterized by trees and shrubs among herbs and grass cover). It also lives in clearings of forested areas and in farmland. In the southeastern United States, this bird lives in pine savannas that are actually maintained and grown just for them. What is important is that habitats contain low-growing brush and vegetation, which is important for food as well as protection from predation.

Diet: They eat mostly seeds, but also fruits, invertebrates, and green leafy materials. About 85 percent of their diet is vegetation, while 15 percent is animal. They do, however, survive on whatever is abundant given the weather and climate conditions. Females eat more insects than do males because they need more protein to produce healthy eggs.

Behavior and reproduction: Behavior of this species is similar to that of the rest of the family. The bobwhite has more calls than other species: one for food location, two parental calls, eleven to warn of danger, four pertaining to group movement, and six sexual. After breeding season, coveys change members and either grow larger or smaller. During this time, some birds travel nearly 60 miles

Both northern bobwhite quail parents incubate the eggs and care for the young after hatching. (John Snyder/Bruce Coleman Inc. Reproduced by permission.)

(100 kilometers). Coveys are comprised of ten to thirty individual birds whose home ranges vary in size depending on quality of habitat.

Bobwhites are believed to have a flexible mating system. Unmated males make the famous “bob-white!” call that can be heard for great distances. Males engage in courtship displays that include puffing out their chests and exhibiting their feathered wings. The head lowers and is moved from side to side to ensure that the female notices his fine markings and coloring. Pairs begin forming in January, and nests are built in shallow bowls on the ground. Vegetation and dead grasses are used to cover and camouflage the nests. Clutch sizes average twelve to fourteen eggs, and they are laid at a rate of one per day. Incubation lasts twenty-three to twenty-four days and is performed by both parents, and if one mate dies, the other will take over.

Chicks leave the nests with the adults within hours of hatching and will fly within fourteen days. Both parents care for the young. Hatching success varies, but is rarely higher than 40 percent. Bobwhite females have been known to lay new clutches and renest as many as four times if necessary. Annual survival of chicks is typically less than 30 percent. Predators include hawks and other birds of prey, snakes, weasels, foxes, raccoons, coyotes, and possums. When threatened, coveys will disperse suddenly in all directions, which often startles intruders so that none of the birds are caught.

Northern bobwhites and people: This species is widely hunted and raised for food. Conservation of the bobwhite is a primary concern because this particular hunting industry turns a huge profit.

Conservation status: Though this population is widespread and common, there has been a steady decline in numbers throughout recent years, primarily in the eastern United States. Conservationists believe this to be the result of reforestation, loss of habitat, and intensification of agricultural practices. Some populations have decreased by as much as 90 percent. The masked bobwhite, a subspecies, is considered Endangered in the United States and is the focus of management and conservation programs in many areas. ■

FOR MORE INFORMATION

Books:

Guthery, Fred S. *On Bobwhites*. College Station, TX: Texas A & M University Press, 2001.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Sibley, David Allen, Chris Elphik, and John B. Dunning, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Knopf Publishing Group, 2001.

Web sites:

Chumchal, M. "*Colinus virginianus*." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Colinus_virginianus.html (accessed on June 10, 2004).

"Northern Bobwhite." ENature. <http://www.enature.com/fieldguide/showSpeciesSH.asp?curGroupID=1&shapeID=964&curPageNum=20&recnum=BD0167> (accessed on June 10, 2004).

"Wildlife in Connecticut: Bobwhite." Connecticut Department of Environmental Protection. <http://dep.state.ct.us/burnatr/wildlife/factshts/bwhite.htm> (accessed on June 10, 2004).

HOATZIN

Opisthocomiformes

Class: Aves

Order: Opisthocomiformes

One family: Opisthocomidae

One species: Hoatzin
(*Opisthocomus*
hoazin)

monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

The hoatzin (watt-ZEEN) is a medium-size bird measuring 24.5 to 27.5 inches (62 to 70 centimeters) and weighing 1.4 to 1.9 pounds (650 to 850 grams). Its face is bright blue and without feathers. It has thick eyelashes above bright red eyes. The bill is short and gray. The head is topped by a fan-shaped crest of long feathers that resembles a punk haircut. Neck is long and buff colored, as is the tip of the tail. Underparts are chestnut colored, upperparts are bronze and olive.

Very young hoatzins have two claws on each wing. These claws allow them to climb back up to the nests if they have been forced by predators to suddenly vacate the nest to seek shelter.

GEOGRAPHIC RANGE

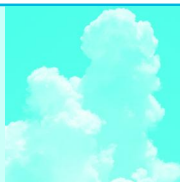
Hoatzins are found in South America.

HABITAT

Hoatzins live in vegetation bordering water such as swamps, lakes, lagoons, streams, and rivers. Large populations can be found along the Amazon and Orinoco River systems. Hoatzins never live in altitudes above 1,640 feet (500 meters).

DIET

These herbivores (plant eaters) feed on little else than tree leaves. They like young leaves and shoots as well as flowers and buds. They eat throughout the day, with especially long



EVEN ECOTOURISM HAS DIFFICULTIES

Ecotourism—that ever-growing industry in which vacationers spend their money to take environmentally sound trips—may come with some not-so-pleasant side effects. According to a March 2004 report in *New Scientist* magazine, researchers claim that the wild animals ecotourism strives to protect are becoming overly stressed when forced to come into contact with humans.

The hoatzin is affected by ecotourism. In one study conducted by Princeton University and the Frankfurt Zoological Society, only 15 percent of hoatzin nests contained eggs in a reserve in Ecuador, compared to 50 percent in restricted areas. The tourist-attracting population also had double the amounts of a particular stress-induced hormone in their

bodies. Researchers placed microphones in the birds' nests and determined that although the birds did not attempt to escape when tourists were nearby, their heart rates escalated.

Ecotourism is a billion-dollar industry that attracts millions of people to nearly ninety nations and territories that might otherwise suffer from lack of funding. The industry directly affects wildlife, habitats, and ecosystems as well as local cultures and people. The concern now lies in the backlash of ecotourism, and experts agree that before ecotourism includes a new hot spot on its list of destinations, it should conduct pre-tourism research and determine how human contact will affect the animals' welfare.

feeding periods at sunrise and sunset. Hoatzins enjoy leaves from more than fifty plant species.

Hoatzins have stomachs similar to those of cows in that they ferment (break down for easier digestion) their food. In other birds with multi-chambered stomachs, fermentation usually occurs in the hindgut (end of the digestive system). But hoatzins have particularly large crops (pouches that resemble stomachs where food is held) containing enzymes that attack food and break it down. The remaining fatty acids are absorbed through the crop wall and used as energy. These bacteria become a source of protein, carbon, and other nutrients. The crop also breaks down toxins present in a number of the plant leaves eaten by hoatzins.

BEHAVIOR AND REPRODUCTION

Hoatzins live in units that include a monogamous (muh-NAH-guh-mus; one male to one female mate) pair and up to



five nonbreeding helpers that are still around from the previous year's nesting efforts. This species is territorial, and all members of the social unit defend the territory by vocalizing, chasing trespassers, and fighting off intruders in the air.

During nonbreeding season, hoatzins leave their territory and form temporary flocks of up to 100 birds. The exception to this is when breeding territories result in unusually high reproductive success. These particular territories are defended year round. Hoatzins are noisy and make a variety of calls, including shrieks, hisses, grunts, and growls. Adults are able climbers but not so good at flying. Even so, they can fly up to 380 yards (350 meters) before needing a rest. As much as 80 percent of their time is spent roosting (resting) in trees.

Throughout the breeding season, hoatzins establish territories along waterways. They are colonial (grouped together) nesters, sometimes building as many as twenty-eight nests in



one tree. Nests are actually unlined platforms of twigs on branches 6.5 to 16.5 feet (2 to 5 meters) high. As a rule, nests are built directly above water.

Females can lay one to six eggs, with two eggs being the most common. Eggs are laid after thirty to thirty-one days of incubation (keeping warm for hatching), which is performed by all members of the unit. When more than one egg is laid, incubation begins with the laying of the second egg. Eggs are laid one-and-a-half days to two days apart. Hoatzin chicks are nearly naked at birth, but are covered with down by twenty days. The crop of a newborn is sterile (free of bacteria). Bacteria forms within the first two weeks as adults feed the chicks.

Newborns are cared for continuously by all members of the social unit for the first three weeks of life. If left undisturbed by predators, nestlings will venture from home at two to three weeks of age. If predators approach, young will drop into the water for protection. They swim underwater and use those wing claws to make their way through aquatic vegetation. Once out, however, they will not return to the nest. Young hoatzins are able to fly around fifty-five to sixty-five days. By day 100, they shed their wing claws.

Newborn hoatzins are protected by adults for their first three weeks. They stay in the nest for those three weeks, unless a predator disturbs them. If they're disturbed, they drop into water (they can swim underwater) to escape, and they don't return to the nest again. (© François Gohier/Photo Researchers, Inc. Reproduced by permission.)

Hoatzins breed during the rainy season. Monkeys are the greatest enemies of this bird. In captivity, the hoatzin can live up to thirty years.

HOATZINS AND PEOPLE

The local name given to this bird in Guyana is “stinking pheasant” because the strong odor of the hoatzin is similar to the smell of cow manure. The odor comes from the fatty acids in the crop. The odor prevents the hoatzin from being hunted for its meat, but hoatzin eggs are consumed by some local populations. The meat is used for bait, and feathers are used to make fans. Locals in the Amazon make a soup from the hoatzin to help relieve asthma.

CONSERVATION STATUS

Hoatzins are not threatened. However, conservationists are concerned over the loss of habitat due to industrial pollution and the conversion of land for agricultural use.

FOR MORE INFORMATION

Periodicals:

Brown, Nancy Marie. “What’s a Hoatzin?” *Research/Penn State* 27, no. 2 (June 1996). Online at <http://www.rps.psu.edu/jun96/hoatzin.html> (accessed on June 11, 2004).

Zahler, Peter. “Crazy Like a Hoatzin.” *International Wildlife Magazine* (July/August 1997). Online at <http://www.nwf.org/internationalwildlife/hoatzin.html> (accessed on June 11, 2004).

Web sites:

“Ecotourism is Stressing Animals to Death.” Cooltech. <http://cooltech.iafrica.com/science/308057.htm> (accessed on June 14, 2004).

Grosset, Arthur. “Hoatzin.” <http://www.arthurgrosset.com/sabirds/hoatzin.html> (accessed on June 11, 2004).

Payne, Robert B. “Recent Families, Birds of the World.” University of Michigan, Museum of Zoology. http://www.ummz.lsa.umich.edu/birds/Bird_Families_of_the_World.html (accessed on June 11, 2004).

Rainforest Conservation Fund. <http://www.rainforestconservation.org> (accessed on July 13, 2004).

CRANES, RAILS, AND RELATIVES

Gruiformes

Class: Aves

Order: Gruiformes

Number of families: 11 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Gruiforms, birds of the order Gruiformes, vary greatly in size. The smallest species, the American black rail, is only 4.7 inches (12 centimeters) high, whereas the Sarus crane, at 5.8 feet (176 centimeters), is the tallest flying bird. Weights in the group also vary tremendously. The American black rail weighs in at only 8 ounces (20 grams), while kori bustards and great bustards have been known to reach weights of more than 40 pounds (18 kilograms), making them among the heaviest flying birds.

Most species of Gruiformes are primarily black, gray, or brown in color, and many species have streaked markings. However, there are some exceptions, including the sunbittern and some rails and cranes. Rails are sometimes greenish or purplish in color. Cranes have black or white feathers, often with distinctive patches of red skin on the head and neck. The sunbittern is a particularly colorful gruiform, with large black and red “eyespot” on its wings—these spots resemble the eyes of a much larger animal and help scare off potential predators.

Bill shape also varies among the gruiforms. Cranes have narrow, medium-length bills that they use to search for invertebrates in soft mud. Trumpeters, which search for food on rainforest floors, have short bills resembling those of chickens. The limpkin has an extremely unusual bill, which bends to the right at its tip. The limpkin’s bill is adapted to feeding on apple snails, its primary food.

phylum

class

subclass

order

monotypic order

suborder

● **order**

GEOGRAPHIC RANGE

Gruiformes as a group are found on all the continents except Antarctica, although most gruiform families have a more limited distribution. The kagu is found exclusively on the island of New Caledonia, off the coast of Australia in the Pacific Ocean. Buttonquails are found in portions of Europe, Africa, Asia, and Australia. Mesites are found in Madagascar. Trumpeters are found in the Amazon basin in the northern part of South America. Seriemas are found in central and eastern South America. The sunbittern is found in Central America and South America. The limpkin is found in Central America and South America, as well as parts of Florida and Mexico. Bustards inhabit portions of Africa, southern Europe, south and Southeast Asia, New Guinea, and Australia. Sungrebes are found in Central America, South America, Africa, and south and Southeast Asia. Cranes are found on all continents except Antarctica and South America, although Asia and Africa are particularly rich in species. Rails, gallinules, and coots are also found worldwide.

HABITAT

The Gruiformes as a group occupy diverse habitats. Sungrebes are aquatic, and generally live in marshes, lakes, and streams. Sunbitterns live in rainforests and swamps. Limpkins live in marshes or swamps. Cranes live in freshwater and marine wetlands. Rails live near swamps, marshes, and lakes. Trumpeters live in tropical rainforests. Kagus inhabit forestlands. Mesites live in a wide variety of habitats, including rainforest, deciduous forest, and dry scrubland. Seriemas occupy grassland habitats. Bustards live in brush and scrub habitats as well as open grassland.

DIET

As a group, the Gruiformes eat a wide variety of plant and animal matter. Sungrebes eat small insects and other aquatic animals, as well as seeds and leaves. Sunbitterns eat insects, small fish, and crustaceans. The limpkin's primary prey is apple snails, but they also eat insects and seeds. Cranes have a diverse diet, eating seeds and other vegetable and animal matter. Rails also eat a diverse diet of animal and plant matter. Trumpeters eat fruits, berries, seeds, and other plant matter. The kagu eats insects, worms, small frogs, and mollusks.

Mesites eat fruit, seeds, and insects. Seriemas eat insects, small reptiles, mammals, and some plant matter. Bustards eat seeds, insects, and other small animals.

BEHAVIOR AND REPRODUCTION

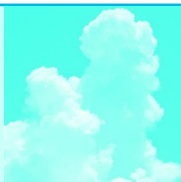
Sunbitterns, limpkins, sungrebes, kagus, and rails tend to be solitary, living alone. Some species are territorial, that is, individuals defend a territory against other members of the same species. Other Gruiformes, however, such as seriemas and mesites, are frequently found in male-female pairs. Finally, some species of bustards, trumpeters, and cranes occur in flocks and can be highly social.

Gruiforms vary from highly able fliers to flightless species. Many cranes, for example, carry out long migrations between their breeding grounds and wintering grounds. Other Gruiformes are reluctant to fly, and flightlessness has in fact evolved many times in the group, particularly among the rails.

Reproductive behavior also varies within the Gruiformes. Cranes are monogamous (muh-NAH-guh-mus)—that is, each male mates with a single female and both parents are involved in building the nest, incubating the eggs, and caring for the chicks once they hatch. In order to strengthen the bond between the pair, cranes engage in elaborate “dances” in which they leap, extend their wings, and bob their heads. Mated crane pairs also sing, or trumpet, together. Crane pairs typically stay together all year round, rather than just during the breeding season, and some mate for life. At the other extreme in reproductive behavior, bustard males mate with as many females as they can. Females build nests, incubate eggs, and raise young on their own, without assistance from the male.

CRANES, RAILS, RELATIVES, AND PEOPLE

Gruiforms have been important to humans for a variety of reasons. Many species currently or traditionally have been hunted for food. Mesites are hunted for food in their habitats in Madagascar. Many species of buttonquails are also hunted for food, although this became illegal in many countries in 2001. Several species of buttonquails are now farmed as domestic livestock. In addition, some buttonquails play a role in the religious ceremonies of the Australian aborigines, and one species, the barred buttonquail, is used as a fighting bird. Cranes are symbols of good luck in many parts of the world, appearing in some



FLIGHTLESSNESS

Flightlessness has evolved in many bird groups, but is particularly common among gruiforms. Rails that occupy island habitats appear to be especially likely to lose the ability to fly, in part because there are no natural predators on many island habitats. Flightless species have the advantage of no longer having to maintain the large avian flight muscles.

cases as national symbols or on coins. The whooping crane is frequently used as a symbol of conservation because of the extensive effort devoted to saving it from extinction. Limpkins were once hunted for meat. Today their calls represent a significant part of the culture of some aboriginal peoples. Kagus have always been hunted for meat, their feathers have been used for decoration by indigenous cultures, and kagu songs were imitated in war dances. In addition, kagus were once kept as pets by Europeans. They now frequently appear as a symbol of New Caledonia. Rails have been hunted for food and sport throughout the world, and rail eggs are often eaten as well. Some species have also served as fighting birds, incubators of chicken eggs, or as pets. Sunbitterns have been kept as pets.

Trumpeters have also been kept as pets or used to guard chicken coops from snakes. They have also been hunted for food. Seriemas are sometimes used to guard chicken coops, again because they kill large numbers of snakes. Bustards make an important contribution to human agriculture by eating large numbers of insect pests. Some bustards are also hunted, particularly in North Africa and Cambodia, in some cases with the use of trained falcons. Finally, many species of Gruiformes attract birdwatchers and ecotourists throughout the world.

CONSERVATION STATUS

In 2000 the World Conservation Union (IUCN) reported that, of the ninety-three species of Gruiformes examined, twenty-two species were already Extinct. In addition, one species, the Guam rail, exists only in captivity and is considered Extinct in the Wild. Four rail species are listed as Critically Endangered, facing an extremely high risk of extinction, while an additional eleven are listed as Endangered, facing a very high risk of extinction. Most endangered rails are threatened by introduced species of non-native mammals such as rats, cats, dogs, mongooses, pigs, snakes, and humans, as well as habitat destruction. The kagu is listed as Endangered, primarily because of the introduction of dogs onto the island of New Caledonia. Habitat destruction due to logging also plays a role. Three species of bustards are listed as Endangered: the great Indian bustard,

Bengal florican bustard, and lesser florican bustard. Bustard populations have been harmed by human hunting, habitat loss to agricultural and grazing land, and cattle and crows, which harm nests. Six additional bustard species are listed as Vulnerable. The cranes as a group are highly threatened, with one Critically Endangered species (the Siberian crane), two Endangered Species (the whooping crane and the Japanese crane), and six Vulnerable species, facing a high risk of extinction (Sarus crane, wattled crane, hooded crane, black-necked crane, blue crane, and white-naped crane).

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Matthiessen, Peter. *The Birds of Heaven: Travels with Cranes*. New York: North Point Press, 2001.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Taylor, P. B., B. Taylor, and B. van Perlo. *Rails: A Guide to the Rails, Crakes, Gallinules, and Coots of the World*. New Haven, CT: Yale University Press, 1998.

Web sites:

"Birds of the World." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/families.htm> (accessed on March 25, 2004).

The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/families.phtml> (accessed on March 25, 2004).

"Order Gruiformes (Cranes, Coots, and Rails)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/gruiformes.html> (accessed on March 25, 2004).

MESITES AND ROATELOS

Mesitornithidae

Class: Aves

Order: Gruiformes

Family: Mesitornithidae

Number of species: 3 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The three species of mesites and roatelos are approximately 12 inches (30 centimeters) in length. Mesites and roatelos are characterized by short, rounded wings, long, wide tails, and sturdy legs. Their bills curve downward, making it easier for them to forage, or hunt for food, on the forest floor.

GEOGRAPHIC RANGE

Mesites and roatelos are found exclusively on the large island of Madagascar, off the eastern coast of Africa. The brown mesite (also known as the brown roatelo) occupies forested areas in the eastern part of the island. The white-breasted mesite (or white-breasted roatelo) is found in forests in the western and northern parts of the island. The subdesert mesite occupies a small area between the coast and hills in the southwestern portion of the island.

HABITAT

Mesites and roatelos are found in distinct habitats on Madagascar. The brown mesite inhabits humid rainforests. The white-breasted mesite inhabits deciduous (leafy) forests. The subdesert mesite occupies open, spiny thicket habitats.

DIET

The brown mesite and white-breasted mesite eat insects and other invertebrates, seeds, and small fruits from the leaf litter on the forest floor. The brown mesite and white-breasted mesite have bills that are adapted to lifting leaves without

disturbing prey that may be hiding underneath. The subdesert mesite has a longer, more extensively curved bill that allows it to find invertebrates on the ground. Like the other mesite species, however, the subdesert mesite will sometimes feed in the leaf litter.

BEHAVIOR AND REPRODUCTION

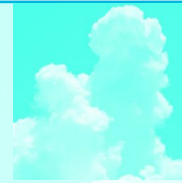
Mesites are diurnal, that is, they are active during the day. Mesites spend most of their time on the ground. Although they are able to fly, they generally do so only when threatened. Mesites are social species, that is, individuals congregate with other members of the same species. In the brown mesite and the white-breasted mesite, birds can often be found in groups of three. This is frequently a male and female pair with their most recent young. The subdesert mesite is generally found in larger groups, of anywhere from six to ten individuals. Both white-breasted mesites and subdesert mesites are territorial, that is, they will defend their territory from other individuals of the same species.

Mesite songs can be fairly complex. In both brown mesites and white-breasted mesites, the male and female of a pair will sometimes sing together.

The brown mesite and white-breasted mesite are monogamous (muh-NAH-guh-mus), with each male bird mating with only a single female. The subdesert mesite is polygamous (puh-LIH-guh-mus), with each male mating with multiple females. Mesites build nests of sticks in low bushes. Usually the female lays one to three eggs at a time sometime during the rainy season from October to April. It is not known how long the eggs take to hatch. Mesite chicks are precocial (pree-KOH-shul), meaning that they are fairly well developed when they hatch. For example, they have feathers and are able to move around. Mesite chicks tend to stay with their parents for quite some time. In the case of the white-breasted mesite, chicks may remain with the parents for up to a year.

MESITES, ROATELOS, AND PEOPLE

All three species of mesites are well known to local humans and are hunted for food. However, in certain portions of



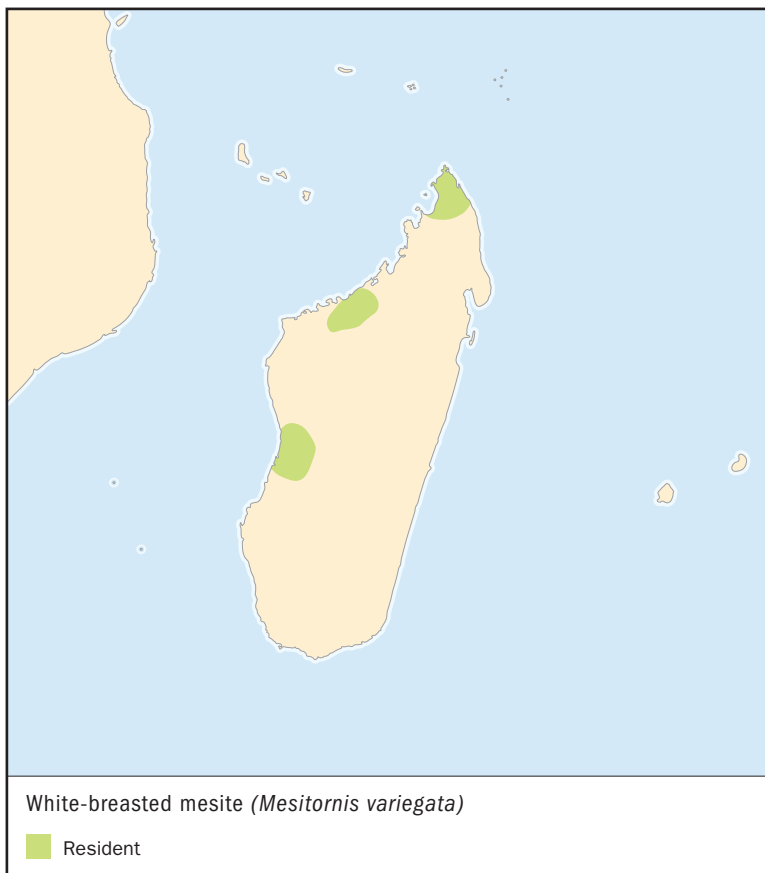
PRECOCIAL CHICKS

Some species of birds, including mesites, many wading birds, and species like chickens and ducks, have precocial chicks. Precocial chicks are developmentally advanced by the time they hatch. They are born with down feathers and are also able to move around and fend for themselves to some degree. Precocial chicks are contrasted with the altricial (al-TRISH-uhl) young of other bird species, including most songbirds. Altricial chicks are featherless and helpless when they hatch.

Madagascar, the brown mesite is not hunted because it is protected by a taboo, one so strictly observed that it is forbidden to mention the bird's name.

CONSERVATION STATUS

The three species of mesites are considered Vulnerable, facing a high risk of extinction, by the World Conservation Union (IUCN). This is due primarily to habitat loss, especially the destruction of forest habitats for agricultural use, logging, or the production of charcoal. Species associated with humans, such as dogs and rats, also negatively affect some populations.



WHITE-BREADED MESITE

Mesitornis variegata

SPECIES ACCOUNT

Physical characteristics: The white-breasted mesite, also known as the white-breasted roatelo, is about 12 inches (30 centimeters) in length. Males weigh approximately 3.5 to 4 ounces (99 to 113 grams) while females are somewhat lighter. White-breasted mesites have reddish brown backs. The throat, eyebrows, and breast are a pale cream color. The neck area is sometimes gray. White-breasted mesites also have black crescent-shaped markings scattered on the sides of the breast and upper belly.

Geographic range: White-breasted mesites are found only on the large island of Madagascar.



White-breasted mesites are usually found on the ground, in groups of three—a male, female, and their chick. (Illustration by Amanda Humphrey. Reproduced by permission.)

Habitat: Where it occurs in western and northern Madagascar, the white-breasted mesite occupies dry, deciduous forests with sandy soils. The eastern portion of its range is characterized by more humid rainforest.

Diet: White-breasted mesites primarily eat invertebrates and plant seeds. It searches for these food items in the leaf litter and low bushes.

Behavior and reproduction: The white-breasted mesite is a secretive species that is most commonly found on the ground. The species does not migrate, but remains near its breeding grounds all year. White-breasted mesites are often found in groups of approximately three individuals, frequently a male and female pair and their most recent young. White-breasted mesites are territorial, meaning individuals defend their territory from others of the same species.

The white-breasted mesite is believed to be a monogamous species. White-breasted mesites build nests 3 to 9 feet (0.9 to 2.7 meters) off the ground. Their nests are generally simple platforms of sticks. The female lays one to three eggs during the breeding period between October and April. White-breasted mesite chicks are precocial, and young remain with their parents for up to a year.

White-breasted mesites and people: White-breasted mesites are sometimes hunted for meat. Because of their small size, however, hunting occurs only irregularly.

Conservation status: The white-breasted mesite is considered Vulnerable by the World Conservation Union (IUCN). Its status is primarily due to a loss of forest habitat to logging and agricultural use. ■

FOR MORE INFORMATION

Books:

Langrand, O. *Guide to the Birds of Madagascar*. New Haven, CT: Yale University Press, 1990.

Morris, P., and F. Hawkins. *Birds of Madagascar: A Photographic Guide*. East Sussex, U.K.: Pica Press, 1998.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Mesitornithidae (Mesites)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Mesitornithidae.html#Mesitornithidae> (accessed on March 29, 2004).

"Mesites, Roatelos." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/mesoenatidae.html> (accessed on March 29, 2004).

"Mesitornithidae (Mesites)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=41> (accessed on March 29, 2004).

BUTTONQUAILS

Turnicidae

Class: Aves

Order: Gruiformes

Family: Turnicidae

Number of species: 17 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Buttonquails are small birds that are short and thick in build. They have small heads, short necks, short legs, and almost no tail. Unlike most birds, buttonquails have only three toes; the hind toe is absent. Buttonquails have short bills that vary between slender (in species that eat mostly insects) and stout (in species that eat mostly seeds). Buttonquails vary in size from 4 to 9 inches (10 to 23 centimeters) in length and 0.7 to 5.3 ounces (20 to 150 grams) in weight.

Buttonquails tend to be brownish, grayish, or dullish red in color. Their backs are often mottled, that is, covered with spots or splotches, or irregularly striped, helping them to blend in against their habitat. The breast, however, is often red or black and white. Buttonquail females are larger and more brightly colored than the males.

GEOGRAPHIC RANGE

Buttonquails are found in southern Europe, Africa, south and Southeast Asia, Australia, and the Solomon Islands.

HABITAT

Buttonquails live in grassland, brush, and some forest habitats. Although they can fly, they live almost exclusively on the ground, often in grasses or amid crops or weeds.

DIET

Buttonquails are primarily seed-eaters. However, they may also eat plant material, insects, and snails. In order to help grind up

their food, buttonquails also swallow a small amount of sand. They find their food on the ground, in litter (the layer of leaves and other material covering the ground), and in low vegetation. In many species, individuals have a distinctive foraging (food hunting) behavior of standing on one foot while scratching the ground with the other, turning in a circle.

BEHAVIOR AND REPRODUCTION

The buttonquail breeding period is generally spring and summer, although tropical species breed all year round. In dry areas, buttonquails tend to breed only during the rainy season.

Buttonquails have an elaborate courtship routine. Females puff up, call with booming notes, stamp their feet, and scratch at the ground. In some species the wings are also spread. Then the male and female rock together, huddle together, dust bathe together, and preen each other's feathers. The female also offers the male a bit of food. In the "scrape ceremony," the female and male act out the motions of building a nest. The actual nest site tends to be in grass, frequently next to a tree. Either the male or female will throw bits of vegetation to the site, while the other partner builds it into a bowl shape, sometimes with a roof. The female does most of the work of nest-building.

Some species of buttonquails are monogamous (muh-NAH-guh-mus), meaning a female mates with a single male. In other species, however, there is a mating system known as sequential polyandry (PAH-lee-an-dree), in which a female courts a male, lays a set of eggs, and then leaves the male to incubate the eggs and raise the chicks while she courts another male. This mating system is fairly unusual among birds.

The number of eggs per clutch varies by species, but is generally between two and seven. Eggs hatch after twelve or thirteen days. Chicks are precocial, meaning they hatch at a developmentally advanced stage, covered with feathers and able to move. They follow the father, who feeds them termites and seeds.



SEQUENTIAL POLYANDRY, AN UNUSUAL BREEDING SYSTEM

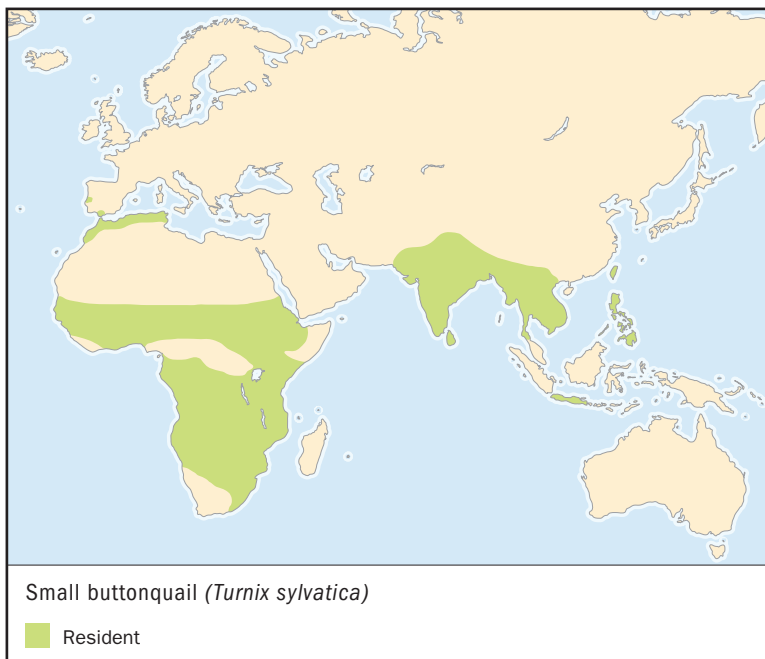
Sequential polyandry, found in some buttonquails, is a mating system in which females mate with multiple males over the course of one breeding season. It is rare among birds. Both monogamy, in which a single female mates with a single male, and polygamy, in which a single male mates with multiple females, are more common. Sequential polyandry accounts for buttonquail females being more brightly colored than males, since it is the females who have to convince the males to mate with them.

BUTTONQUAILS AND PEOPLE

Many buttonquail species were once hunted for food, although this is no longer legal in most western countries. Some species, including the common buttonquail and some Australian species, are bred for food. Buttonquails have also been important in some of the rituals of the Australian Aborigines.

CONSERVATION STATUS

Of the seventeen species of buttonquails, two are listed as Endangered, facing a very high risk of extinction, or dying out, in the wild, by the World Conservation Union (IUCN), the black-breasted buttonquail and buff-breasted buttonquail. There are approximately 500 black-breasted buttonquails in existence, and 5,000 buff-breasted buttonquails. Four additional species are listed as Vulnerable, facing a high risk of extinction in the wild: the Worcester's buttonquail, Sumba buttonquail, Australian chestnut-backed buttonquail, and plains-wanderer. The spotted buttonquail is listed as Near Threatened, not in immediate danger of extinction. Most species of buttonquails are declining due to habitat destruction for agriculture.



SMALL BUTTONQUAIL

Turnix sylvatica

SPECIES ACCOUNTS

Physical characteristics: The small buttonquail is 5.9 to 6.3 inches (15 to 16 centimeters) in length and 1.4 to 1.9 ounces (39 to 54 grams) in weight. It is chestnut in color with a reddish breast and shoulders and a slender blue-gray bill. The female is somewhat larger and more brightly colored than the male.

Geographic range: The small buttonquail is found in southwestern Spain and northern Africa, in sub-Saharan Africa, in southern and Southeast Asia, in the Philippines, and in Indonesia.

Habitat: The small buttonquail inhabits grassland, farmland, and scrub areas.

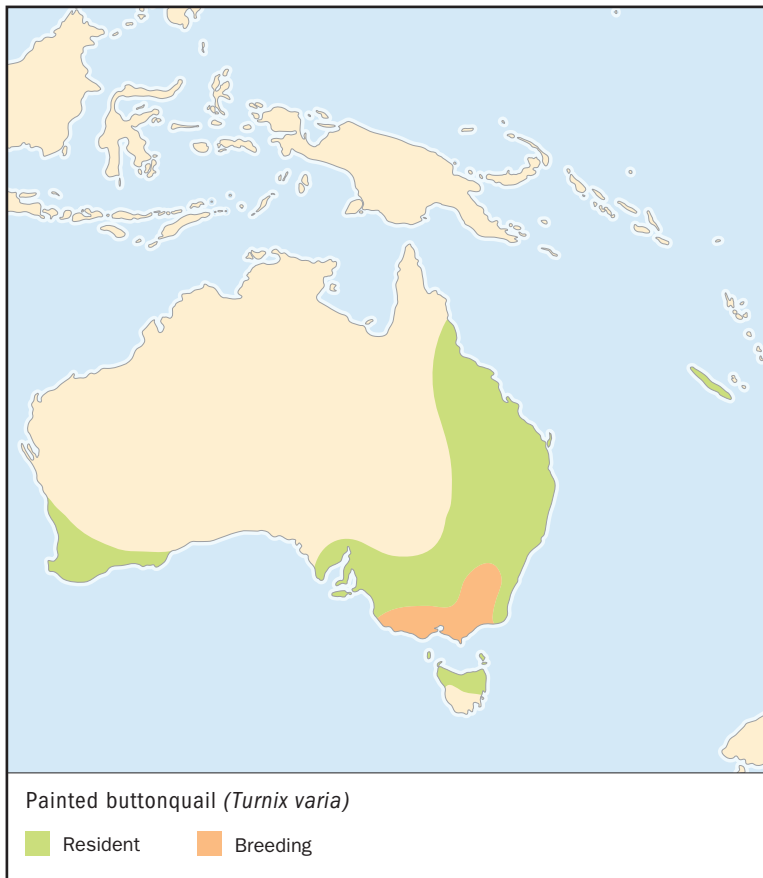
Diet: The small buttonquail tends to be primarily insectivorous, that is, eating insects and other invertebrates. It also eats seeds.

Behavior and reproduction: The small buttonquail is primarily diurnal, or active during the day, although it is also partly nocturnal,

or active at night. The small buttonquail breeds year-round during the rainy season in all parts of its range except Europe, where breeding occurs only in spring and summer. Females are sequentially polyandrous (the female mates with one male, leaves him a clutch of eggs to tend, and then mates with another male, repeating the process throughout the breeding season). Usually four eggs are laid at a time by the female and hatch after twelve to fifteen days. Chicks can fly by seven to eleven days old and become independent at eighteen to twenty days.

Small buttonquails and people: The small buttonquail is hunted for food throughout its range except in Europe, where it used to be hunted. The small buttonquail is also raised for food.

Conservation status: The small buttonquail is not threatened, although its European populations have been declining, and it is now only rarely found there. ■



PAINTED BUTTONQUAIL

Turnix varia

Physical characteristics: The painted buttonquail is a large species 6.7 to 9.1 inches (17 to 23 centimeters) in length and 1.9 to 4.7 ounces (53 to 134 grams) in weight, with the female significantly larger than the male. The painted buttonquail is generally red in color with a gray breast and red eyes.

Geographic range: The painted buttonquail is found in eastern, southeastern, and southwestern Australia, on islands off the coast of southwestern Australia, and in New Caledonia.



Painted buttonquails scratch on the ground to find seeds, insects and other invertebrates, and green plant shoots to eat. (Illustration by John Megahan. Reproduced by permission.)

Habitat: The painted buttonquail is found in diverse habitats from grassland to grassy or open forest, and in grassy clearings within dense forests.

Diet: The painted buttonquail eats seeds, insects and other invertebrates, and green plant shoots. Food is found by scratching on the ground.

Behavior and reproduction: Reproduction occurs in late winter to autumn in southern and eastern habitats, and all year round in tropical regions. Female painted buttonquails are sequentially polyandrous. Generally three or four eggs

are laid at a time; these hatch after thirteen to fourteen days. The male feeds the chick for seven to ten days. At ten days chicks can fly, and by twenty-three days they are the same size as adults.

Painted buttonquails and people: Painted buttonquails are bred for food.

Conservation status: Painted buttonquails are not threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Johnsgard, P. A. *Bustards, Hemipodes, and Sandgrouse*. New York: Oxford University Press, 1991.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Button-quails, quail-plover." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/turnicidae.html> (accessed on April 1, 2004).

"Turnicidae (Buttonquails)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=42> (accessed on April 1, 2004).

family CHAPTER

CRANES Gruidae

Class: Aves

Order: Gruiformes

Family: Gruidae

Number of species: 15 species

PHYSICAL CHARACTERISTICS

Cranes are tall birds with large wings, long legs, and long, graceful necks. Most species are black and white or gray in color. Often there are bright patches of bare red skin that are shown in threat and dance displays.

GEOGRAPHIC RANGE

Cranes are found on all continents except for Antarctica and South America.

HABITAT

Most cranes live in wetland habitats. Breeding generally occurs during the summer in freshwater wetlands. Some cranes spend the winter in coastal saltwater marshes. A small number of crane species live primarily in grassland habitats.

DIET

Grassland crane species primarily eat insects and seeds and have relatively short bills. Cranes with medium length bills eat insects and seeds from grain fields, in addition to a wide variety of plant and animal matter from wetland areas. Cranes with long bills use one of two feeding strategies. “Diggers” dig holes in wet mud to look for tubers, root vegetables like potatoes. The holes are sometimes 1.6 feet (0.5 meters) deep. “Catchers” look for live animals on the ground.

BEHAVIOR AND REPRODUCTION

Many cranes are migratory, meaning they travel from breeding (summer) areas to wintering areas each year. Some species

phylum

class

subclass

order

monotypic order

suborder

▲ family



WETLAND LOSS AND CRANE ENDANGERMENT

Because of the loss of wetland habitats in many parts of the world, cranes that are more heavily dependent on wetland areas tend to be the most endangered. These include the Siberian crane and the whooping crane. Crane species that use grassland habitats more frequently, especially those that have learned to hunt for food in agricultural fields, have tended to thrive. These include the demoiselle, sandhill, and Eurasian cranes.

travel thousands of miles during their migration. In many species, breeding occurs during the wet season. During the non-breeding dry season, cranes may gather in large flocks, or groups of birds. This flocking behavior is believed to allow individuals to find mates.

Cranes have loud, trumpeting calls. These calls are used to communicate a wide variety of messages to individuals of the same species. A contact call is given between individuals that know each other, such as a crane and its mate or a parent and its chicks. Other calls used by cranes signal aggression, an intention to fly, pain, or a warning of danger. The unison call is made simultaneously by a male and female pair and is intended to warn other cranes away from their territory.

In addition to calls, cranes also have elaborate displays, characteristic motions used in communicating with others of the same species. These displays can involve raising feathers around the head, unique motions of the bills, and exposing and/or changing the size of red skin patches on the heads that are normally covered by gray feathers. Displays are often used to threaten other cranes or to express submission to a more dominant crane. Conflicts that are not resolved by a threat display proceed to a ritualized fight that will not seriously injure either crane. The ritualized fight involves leaping up with the legs folded, and then using the legs to push at the other bird's breast. Conflicts between cranes are particularly common during flocking, when large numbers of birds are gathered together.

Cranes are monogamous (muh-NAH-guh-mus), a single male breeds with a single female. Cranes often mate for life. They are also territorial; a pair of cranes will defend their area of land, or territory, against other cranes of the same species. Nests are built within the wetland or grassland habitat. Females generally lay two eggs at a time and both parents incubate, sit on and warm the eggs for chick development. Eggs hatch after about a month, and offspring are able to fly after about two or three months. However, young cranes usually remain with the parents until about nine months of age. If both eggs hatch, one

of the crane offspring is generally dominant to the other, that is, it has higher rank and receives more food from the parents. In the majority of cases, only the dominant offspring survives from each nest.

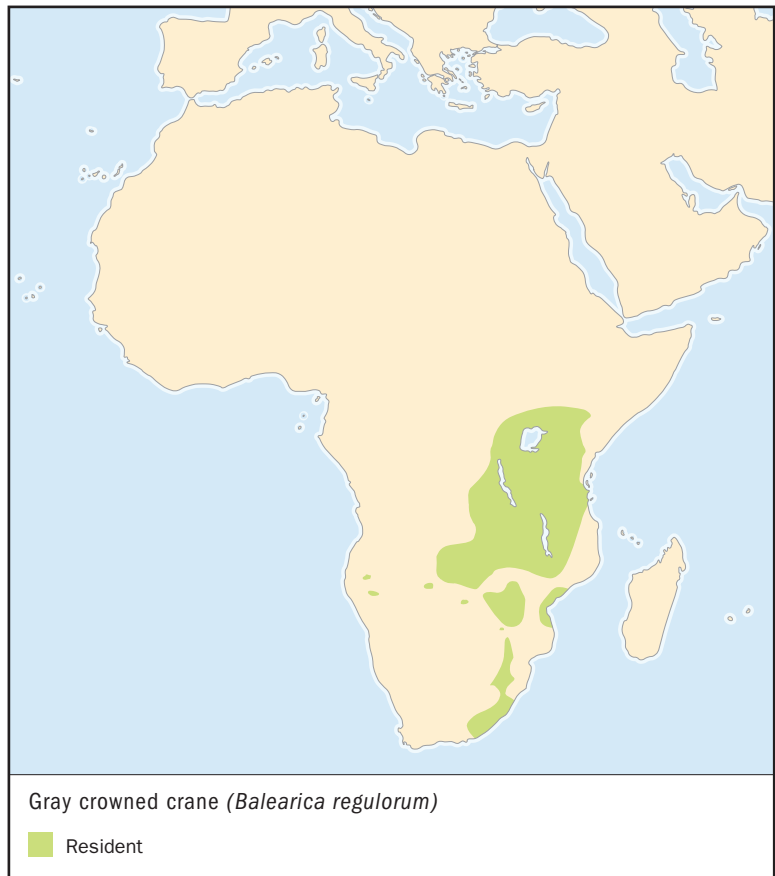
CRANES AND PEOPLE

Cranes symbolize good luck in many places throughout the world. The whooping crane is used as a symbol of conservation in the North American because it nearly became extinct before intense efforts by the United States and Canada helped populations increase in number.

CONSERVATION STATUS

Of the fifteen crane species, one is listed as Critically Endangered, facing an extremely high risk of extinction, or dying out, in the wild. Two are listed as Endangered, facing a very high risk of extinction in the wild, and six are listed as Vulnerable, facing a high risk of extinction in the wild, by the World Conservation Union (IUCN).

SPECIES ACCOUNTS



GRAY CROWNED CRANE *Balearica regulorum*

Physical characteristics: Gray crowned cranes are named for their characteristic crown of gold feathers. They have a pale gray neck and red throat wattles. The rest of their bodies are black, white, and gold in color. Gray crowned cranes are 39 to 43.3 inches tall (100 to 110 centimeters) and weigh anywhere from 6.6 to 8.8 pounds (3 to 4 kilograms). They have a wingspan of between 71 and 79 inches (180 to 200 centimeters).

Geographic range: Gray crowned cranes are found in portions of eastern Africa.



Gray crowned crane courtship, behavior to help attract a mate, includes the male and female “dancing” with one another. (© Mitch Reardon/Photo Researchers, Inc. Reproduced by permission.)

Habitat: Gray crowned cranes occupy both wetland and grassland habitats.

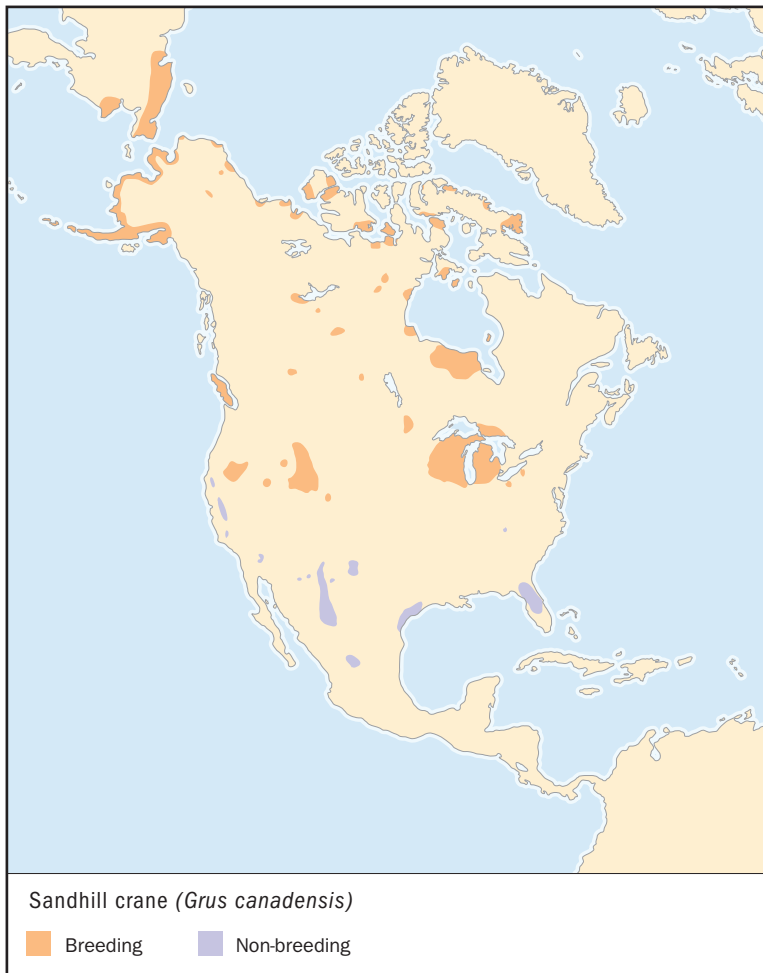
Diet: Gray crowned cranes eat a wide variety of food items, but focus primarily on seeds and insects.

Behavior and reproduction: Gray crowned cranes are frequently found in trees. Individuals nest in wetland or grassland areas. Instead of building their own nests, gray crowned cranes frequently use ground nests that have been abandoned by other large bird species. In general two eggs are laid. Both the male and female incubate, or sit on, the eggs. These hatch after about a month and the young are able to fly after two or three months. However, they may remain with their parents for as long as nine months.

Gray crowned cranes and people: The gray crowned crane is the national bird of Uganda. It is also regarded as an important symbol

in other parts of its range, including Kenya, Namibia, South Africa, and Zambia.

Conservation status: Although gray crowned cranes are not currently considered threatened, many populations have declined due to the drainage of its wetland habitats. ■



SANDHILL CRANE

Grus canadensis

Physical characteristics: Sandhill cranes have gray bodies, necks, and heads, and a bare patch of red skin on the top of the head. Individuals can achieve heights up to 47.2 inches (120 centimeters) and generally weigh between 7.3 and 12 pounds (3.3 to 5.4 kilograms). Sandhill cranes have a wingspan of between 63 and 82.6 inches (160 to 210 centimeters).

Geographic range: Sandhill cranes are found across North America from Quebec to British Columbia, and north to Alaska and

Sandhill cranes live in groups in wetland areas. (© C.K. Lorenz/ Photo Researchers, Inc. Reproduced by permission.)



eastern Siberia. Some populations also occur in portions of the United States and Cuba.

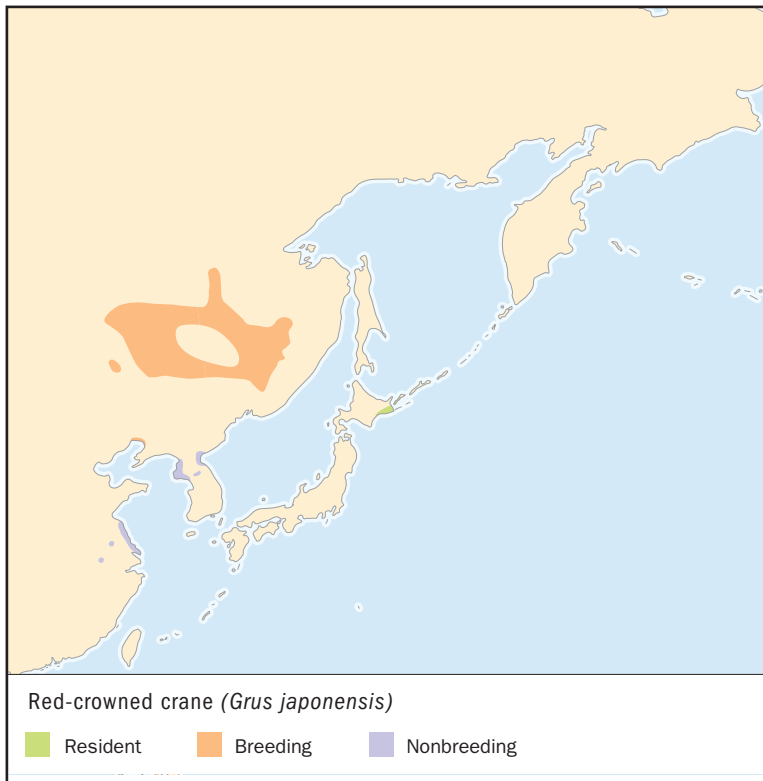
Habitat: Sandhill cranes inhabit wetland areas. In the winter it is sometimes found in grassland areas or agricultural fields as well.

Diet: Sandhill cranes have a varied diet including grains, berries, insects, and rodents.

Behavior and reproduction: Some sandhill cranes are migratory while others remain in their breeding areas all year round. During the breeding season, female sandhill cranes generally lay two eggs. Both parents incubate and feed chicks after they hatch. Chicks hatch after twenty-nine to thirty-two days and are able to fly by fifty to ninety days after hatching.

Sandhill cranes and people: Sandhill cranes are an important part of Native American culture. Elements of the cranes' mating dance appear in some Native American dances.

Conservation status: Of the six subspecies, population groups within a species, of sandhill crane, four are not considered threatened, but two subspecies, the Mississippi and the Cuban, are listed as endangered by the U.S. Fish and Wildlife Service. ■



RED-CROWNED CRANE

Grus japonensis

Physical characteristics: Red-crowned cranes, or Japanese cranes, have white bodies and bare red skin on the top of the head. This crane is about 59 inches (150 centimeters) in height, 15.4 to 22 pounds (7 to 10 kilograms) in weight, and has a wingspan of between 86.6 and 98.4 inches (220 to 250 centimeters).

Geographic range: The red-crowned cranes are found in parts of China, Russia, Korea, and Japan.

Habitat: The red-crowned crane is a rather aquatic species among cranes. It inhabits both freshwater and saltwater wetlands and marshes as well as some rivers.

Diet: Red-crowned cranes eat a wide variety of items, including insects, fish, rodents, and plants.

Red-crowned crane males and females have elaborate courtship dances before mating. Males also display to other males to warn them away from their territory. (© Akira Uchiyama/Photo Researchers, Inc. Reproduced by permission.)



Behavior and reproduction: Red-crowned cranes are well-known for their elaborate courtship dances. Generally, the female lays two eggs during the breeding season. Both parents incubate and feed the chicks after they hatch. Eggs hatch after twenty-nine to thirty-four days. The young are able to fly after approximately ninety-five days.

Red-crowned cranes and people: Red-crowned cranes are considered sacred in many parts of its range in East Asia. They are associated with happy marriages, love, long life, and good luck. Red-crowned cranes have frequently appeared in East Asian poetry and art.

Conservation status: Red-crowned cranes are listed as Endangered by the IUCN. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Matthiessen, Peter. *The Birds of Heaven: Travels with Cranes*. New York: North Point Press, 2001.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Cranes." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/gruidae.html> (accessed on April 5, 2004).

"Family Gruidae (Cranes)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Gruidae.html#Gruidae> (accessed on April 24, 2004).

"Gruidae (Cranes)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=43> (accessed on April 24, 2004).

International Crane Foundation. <http://www.savingcranes.org/> (accessed on July 12, 2004).

LIMPKIN

Aramidae

Class: Aves

Order: Gruiformes

Family: Aramidae

One species: Limpkin (*Aramus
guarauna*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Limpkins are medium-sized gruiform (member of the order Gruiformes) species that have long legs with spread toes, a long, downward-curving bills, and rounded wings and tails. Limpkin bills curve slightly to the right at the tip, a feature that helps them extract its primary prey item, the apple snail, from its shell. There is also an unusual, small gap in the bill which appears to help limpkins carry and manipulate apple snails. Finally, the tip of the upper bill is sharpened and used to cut snails from their shells. Limpkins are primarily dark brown in color although there are white spots on the neck, breast, and the outside surface of the wings. Limpkins are about 26 inches (66 centimeters) in length and can weigh up to 2.4 pounds (1.1 kilograms). They have a wingspan of approximately 40 inches (102 centimeters). Male and female limpkins are generally similar in size and coloration.

GEOGRAPHIC RANGE

Limpkins are found only in the Western Hemisphere, from Florida through most of Mexico, the West Indies, and Central America. They are also in South America east of the Andes mountain range and as far south as central Argentina.

HABITAT

Limpkins generally occur in wetland habitats, including shallow-water areas near ponds, lakes, and slow-moving rivers.

DIET

Limpkins are highly specialized feeders, meaning they focus on very few food items and have special adaptations which help them deal with their diet. The limpkin's primary prey is the apple snail, a large freshwater mollusk which occurs throughout the range of limpkins. Limpkins search for apple snails in the muddy bottoms of shallow bodies of water, trying to find them either visually, or by prodding the mud with their long bills. They search for food in the open, as the cranes do. Once a limpkin finds a snail, it carries it to shallow water to cut it from its shell and eat it. Although adult limpkins never swallow snails whole, young limpkins do. Young limpkins are brought small snails by their parents and swallow them entire. Although apple snails form the bulk of their diet, limpkins may also eat mussels, insects, crayfish, small reptiles or frogs, and the seeds of some plants.

BEHAVIOR AND REPRODUCTION

Most limpkins are solitary, they live alone. In some cases, limpkins may be found in pairs, usually male and female breeding partners, or in small groups. Limpkins are good swimmers and slow but strong fliers. The name limpkin comes from the slightly awkward walk of the species. However, limpkins are in fact strong runners. At night, limpkins tend to roost either in shrubs or in the tops of dead trees. Most limpkins are not migratory, spending the entire year in one location. However, some South American limpkin populations move between a wet season habitat and a dry season habitat.

The limpkin is the only species in the family Aramidae and has no close relatives. However, within the Gruiformes, similarities to both cranes and rails have long been noted. In particular, the general physical appearance and hunting behavior of limpkins resemble that of cranes, but other aspects of behavior, including a more secretive nature, resemble that of rails and their relatives.

The call of a limpkin is extremely distinctive. It is a loud, wild-sounding scream or wail that is frequently described as a



SNAIL EATERS

The apple snail is important to the limpkin's diet. Limpkins have several physical adaptations that help it deal with this prey. Since the apple snail's shell curves to the right, limpkins adapted a bill that also curves to the right, making it possible to insert the bill into the snail shell. The tip of the upper beak is sharpened to allow limpkins to cut the snail out of the shell. Finally, limpkins have a small gap in the bill which helps them carry and handle snails.



“kree-ow kree-ow” sound. The call is given most often in the early morning or at night, as well as on cloudy days. This loud, distinctive cry accounts for some of the nicknames the limpkin has picked up in parts of its range. These include wailing bird, crying bird, and crazy widow. Limpkins also make a quieter clicking noise.

Limpkins build their nests near water. Most often, nests are built either on the ground, hidden in dense vegetation, or up in a tree. In some cases, nests may be 20 feet (6 meters) off the ground or even higher. Nests are built from reeds and grass and lined with softer plant material. In general, four to eight eggs are laid at a time by the female. The eggs range from white to pale brown in color, and may or may not be lightly spotted. Both male and female limpkins participate in all phases of reproductive activity, including nest-building, incubating the eggs, and feeding and caring for the young once they hatch. Limpkin young are



Limpkin chicks are able to leave the nest about one day after hatching. (© Bill Dyer/Photo Researchers, Inc. Reproduced by permission.)

precocial (pree-KOH-shul), meaning they are fairly developmentally advanced when they hatch, being covered with down (rather than featherless) and able to move. Limpkin chicks are able to leave the nest about one day after hatching, and follow one of the parents around until they become independent.

LIMPKINS AND PEOPLE

Limpkins were once hunted for meat, but hunting is no longer common. Now they are important in the tourist industry, attracting birdwatchers in many parts of their range. Limpkins are also important to many local cultures, and are particularly well-known for their powerful wailing cries.

CONSERVATION STATUS

Limpkins are not considered threatened at the present, although they have been designated a “species of special concern”

in Florida, the only place in the United States where they occur. However, at the beginning of the twentieth century, limpkins were almost hunted to extinction in the U.S. for their meat. Protection since then has allowed many populations to recover. At present, many limpkin populations are again declining due to damage and destruction of the wetland habitats they require.

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Eckert, A. W. *The Wading Birds of North America (North of Mexico)*. New York: Weathervane, 1981.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003

Web sites:

"Aramidae (Limpkin)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=44> (accessed on April 25, 2004)

"Family Aramidae (Limpkin)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Aramidae.html#Aramidae> (accessed on April 25, 2004)

"Limpkin." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/aramidae.html> (accessed on April 25, 2004)

family CHAPTER

KAGU Rhynochetidae

Class: Aves

Order: Gruiformes

Family: Rhynochetidae

One species: Kagu (*Rhynochetos jubatus*)

PHYSICAL CHARACTERISTICS

An adult kagu is about the size of a domestic chicken, with a head-and-body length of about 22 inches (55 centimeters), and a weight of 1.5 to 2.5 pounds (24 to 40 ounces). A kagu resembles a small crane with a coat of very light gray feathers, a short tail, and reddish-orange beak, eyes, legs, and feet. A crest of feathers crowns the kagu's head. When not raised for display, the crest lays down towards the back of the head.

The beak is long and slender. The edges of the nostrils are raised into ringlike flanges, making the nostrils look like short tubes. The flanges keep soil from getting into the nostrils as the bird forages in leaf litter and soil for food. The scientific name of the bird, *Rhynochetos jubatus*, from the Latin, translates as “tube-nosed, head-crested.”

The wings are light gray with black, dark, lighter gray, and brownish spots arranged in rows or bars along the outer sides of the open wings. The dark spots are covered when the wings are closed. Although the wings are large and look flightworthy, kagus cannot fly, since they have lost most of the mass of their once-powerful flight muscles. The open wingspan can reach 32 inches (80 centimeters).

Although most bird species that spend time on forest floors are camouflaged (KAM-uh-flajd), the adult kagu doesn't follow that rule, being light-colored and very obvious in a dark forest. It may be that kagus never needed camouflage before people brought dogs, cats, and other predators, animals that hunt them for food, to Grand Terre. Or, the light coats may have evolved

phylum

class

subclass

order

monotypic order

suborder

▲ family

for a territorial role, enabling kagus to easily spot other kagus, during mating times or for defending territories. Kagus are always ready to chase off other kagus that intrude on individual territories. Kagu chicks are brown and light brown colored, which does help them to blend into the colors of the forest floor.

GEOGRAPHIC RANGE

Grand Terre, the largest island of the New Caledonia island group, in the southwestern Pacific Ocean. Presently, the entire population of kagus is broken up into isolated groups in various forest areas on Grande Terre. The largest population lives in Blue River Territorial Park, near the southern tip of the island. The park is patrolled and dogs are kept at bay. The second largest population is legally protected in Nodela Special Reserve, but the reserve has no guards or controls on dogs. There is a third small, partly fenced park for semi-captive breeding of kagus, near Noumea, the capital of New Caledonia.

HABITAT

Kagus live in most kinds of forest on Grand Terre, although they seem to prefer tropical rainforests, from sea level up to 4,200 feet (1,400 meters). They will forage in shrubby or bushy areas and in low-growing dry forest, during the seasonal rains, when their sort of animal food becomes abundant. Kagus do not inhabit grasslands.

DIET

The kagu eats ground-living snails, insects, spiders, earthworms and lizards, which it forages for on forest floors. The most popular foods among kagus are earthworms and snails. Since the abundance and types of food creatures change with the seasons, and to keep from eating too much food in one area, kagus forage in different parts of their territories at different times of the year.

A kagu begins a feeding run in the early morning by simply standing still. With its excellent vision and hearing, the kagu is listening for the faintest noises and looking for the slightest movements that may betray the presence of food animals. After picking out certain spots that harbor food creatures, the kagu walks slowly and starts probing the layer of dead leaves on the forest floor at those spots.

When a kagu spots a prey animal, the bird approaches it carefully, then lunges at it and snags it in a quick motion. Kagus

hunt not only in the layer of fallen leaves on the forest floor for spiders, beetles and snails, but pokes its beak into the soil to expose worms and larvae. It deals with snails by smashing the shell on a rock to get at the snail's body.

BEHAVIOR AND REPRODUCTION

Kagus are active during the day and sleep at night. A kagu sleeps out the night at one of several sleeping stations in its territory, rotating its overnights at the various stations over time. Most of the time, a kagu climbs a tree to perch for the night on a branch 5 to 12 feet (1.5 to 3.7 meters) above the ground. In high, mountainous territory with cool nights, a kagu prefers nighttime shelter in enclosures formed by rocks or in tree roots.

Kagu male and female pairs mate for life. Mated pairs stake out large forest floor territories, through which the birds wander daily, searching for food. Outside of the breeding season, the male and female stay in their territory but temporarily split up and wander alone.

Kagus make dog-like barkings, hissings, and rattling noises. Every morning, shortly before dawn, kagu pairs sound off with barkings, the male and female taking turns. A threatened kagu warns with a hissing sound.

The breeding season runs from June to December, the most breeding taking place in July. During those months, unmated kagus display for mates by raising the head crest into a magnificent plume and spreading their wings out as wide as possible and tipping them up and forwards so that the outer wing surface faces forward, showing the dark markings. Both sexes display. A female will answer a displaying male with a similar display. Then they perform a courtship dance, circling each other. The dance may end with mating, or the pair may lose interest and stop the dance, each bird going its separate way. Kagus of both sexes also display to defend territory.

A mated kagu pair builds a ground nest of dry leaves, eight to twelve inches in diameter, in which the female lays a single egg weighing two and a half ounces. The male and female take turns sitting on the egg for twenty-four hour stretches, one parent usually replacing the other at midday. The incubation period lasts an average of thirty-five days. The young chick has a coat of brown, downy feathers. Both parents care for the chick, and feed it with insects, spiders, and earthworms.

At only three days of age, the chick will begin walking away from the nest. At first, it doesn't wander very far, but by the end of its first week, it has hiked up to 450 feet (137 meters) from the nest. After about six weeks, the young bird begins roosting overnight on low-placed tree branches, as its parents do.

Should a chick die before it matures, the female will soon lay a second fertilized egg as a replacement. The parents stop feeding the young when they are three and a half to four months old, forcing the young to strike out on their own for feeding. Nevertheless, the young may stay with their parents indefinitely, even when mature, and assist the parents in caring for younger brothers and sisters. This is a very rare behavior among birds, but routine in some mammal species like the small, New World monkeys known as marmosets and tamarins.

Kagus in captivity can live up to thirty years. Those in the wild generally live fifteen years.

KAGUS AND PEOPLE

Like many island bird species, the ancestors of the kagus lost their powers of flight and became ground-living animals. With no predators to fear and plenty of food on the forest floors, kagus had no need of flight and the enormous amounts of energy that flying requires. So the ancestral kagus gave up flying, keeping large wings for display purposes. They were safe on the ground and must have been quite numerous, even into the hundreds of thousands, until the arrival of humans on the islands.

Kagu species, living and extinct, were hunted for food and for ornamental feathers by the native people of New Caledonia, and this most likely pushed the extinct kagu out of existence. European settlers captured kagus for keeping as pets or for use of their feathers as decorative hat plumes, which were popular in the early 1900s.

Other major, human-made threats to kagus include loss of habitat and fragmentation of populations. Forests are being cleared for agriculture and especially for mining, since Grand Terre has some of the world's most abundant supplies of nickel ore. Once free to roam all over the island, the original population of kagus is split up and isolated into small pockets throughout Grand Terre. This is not good for breeding, since there is no free exchange of genes across a large population, which is the healthy state of things in a wild species.



CONSERVATION STATUS

The kagu is listed as Endangered, facing a very high risk of extinction, under the U.S. Endangered Species Act and on the Red List of the World Conservation Union (IUCN).

The rehabilitation of the kagu is one of conservation's better success stories, although the birds are still listed as Endangered. That kagus still survive and have even increased their numbers since 1980 is largely due to the efforts of one man, Yves Letocart, a New Caledonian citizen, who has been working with kagus and their environment since 1980. Much of what we know about kagu behavior comes from Letocart's field work.

Today, as a result of Letocart's field work, captive breeding and release of young birds, and predator control, an estimated 300 kagus inhabit Blue River Park, which has been classified and proclaimed a territorial park by the governments of New Caledonia and France. The kagu is now the official emblem of New Caledonia.

Most important for the survival of the kagu is protecting it in areas made inaccessible to invasive animals by trapping, shooting, and the use of fencing; increasing the kagu's numbers

through captive breeding; and creating forest “corridors” that allow isolated populations to intermingle.

FOR MORE INFORMATION

Books:

Balouet, Jean Christophe, and Storrs L. Olson. *Fossil Birds from Late Quaternary Deposits in New Caledonia*. Smithsonian Contributions to Zoology Series. Washington, DC: Smithsonian Institution Press, 1989.

Logan, Leanne, and Geert Cole. *Lonely Planet New Caledonia*, 4th ed. Oakland, CA: Lonely Planet Publishing, 2001.

Wheatley, Nigel. *Where to Watch Birds in Australasia and Oceania*. Princeton, NJ: Princeton University Press, 1998.

Periodicals:

Clements, James F. “Kagu!” *WildBird* (October 1998): 46–49.

Cook, S. "The Kagu." *Birding World* 11 (1998): 440–441.

Salas, Michel, and Yves Letocart. "Spatial Organisation and Breeding of Kagu, *Rhynochetos jubatus*, in Rivière Bleue Park, New Caledonia." *Emu* 97, no. 2 (1997).

Storer, Robert W. "Avian Exotica: The Kagu." *Birder's World* (August 1993): 64–65.

RAILS, COOTS, AND MOORHENS

Rallidae

Class: Aves

Order: Gruiformes

Family: Rallidae

Number of species: 134 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Rails are usually colored to blend into their environments. Browns, blacks, grays, and blue-gray shades are particularly common in the group. One group of gallinules, however, tends to have brighter colors such as purples, blues, and greens. Rails often have spotted, barred, or streaked patterns. The underside of the tail is frequently differently colored from the rest of the animal. Generally, females and males are similarly colored, with a few exceptions such as the flufftails and some of the New Guinea forest rails.

Rails vary in size from 4.7 inches (12 centimeters) and 0.7 ounces (20 grams) for the black rail, the smallest member of the family, to 24.8 inches (63 centimeters) and 9.2 pounds (4.2 kilograms) for the takahe, a large, flightless rail species. In most rails, males and females are similar in size. However, males are much larger than females in a few species.

The bodies of rails are often laterally compressed, flattened on the sides, a trait which allows them to move easily through dense vegetation. Many species have long necks. The wings of most rails are short, broad, and rounded. An unusually large number of rails are flightless, unable to fly. These are generally species found on islands that have no natural predators, animals that hunt them for food. Even some rails that are able to fly sometimes escape danger by running away instead of flying. Some rails also have a sharp claw on the wing that helps individuals, particularly young rails, climb. Rails generally have short tails. Bills vary a lot among the rails, and may be long or

short, straight or downwardly curved, and thick or thin. Bill shape depends primarily on diet. Rails have strong legs and feet. In some species the legs are rather long.

GEOGRAPHIC RANGE

Rails are found worldwide except in the Arctic and Antarctica, and in very dry deserts. They are particularly common on oceanic islands. In part, this is because of their weak flying abilities, which causes them to be easily thrown off course.

HABITAT

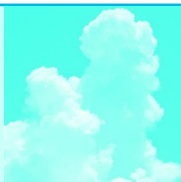
Rails live in a wide variety of habitats, including wetland, grassland, scrub, and forest. Wetlands have the largest number of rail species, although many species are also found in rainforests. Both freshwater and coastal saltwater wetlands are used by rails. Coots are the most aquatic rails and live in freshwater habitats such as lakes and ponds. Rails that live in forested areas can inhabit diverse forest types with almost any type of ground cover, either clear, with leaf litter, with mud, or covered with dense vegetation.

DIET

Rails are omnivorous, meaning they eat both plant and animal matter. The more aquatic rails, such as coots and gallinules, tend to eat primarily plant matter, whereas wetland and terrestrial rails tend to have a diet consisting mostly of animal matter. Animal matter eaten by rails can include insects, spiders, worms, mollusks, crustaceans, and sometimes small fish, frogs, tadpoles, lizards, snakes, or turtle hatchlings. Rails will also eat the eggs or chicks of other birds. Some rails even eat carrion, dead animal matter. Plant matter eaten by rails can include fruits, seeds, stems, leaves, tubers, roots, and, in some species, cultivated crops. Most rails are generalists, that is, they eat a wide variety of foods, concentrating on whatever food is most abundant at the time. However, there are a few specialists. The chestnut rail and rufous-necked wood-rail, for example, inhabit mangrove forests and eat mostly crabs.

BEHAVIOR AND REPRODUCTION

Most rails are solitary, meaning they live alone, although some can be found in pairs, usually male and female breeding partners, or in small groups. Some species, however, including most coots and some gallinules and moorhens, sometimes



FLIGHTLESSNESS IN RAILS

Flightlessness is unusually common in rails, with 24 of the 134 rail species having lost the ability to fly. All flightless species occur on islands, particularly those where there are no natural predators. Flightlessness may be common in rails because they are weak fliers with a tendency to avoid predators by running rather than flying away. Flightless species usually have smaller wings and stronger legs than species that fly.

gather in large flocks during the nonbreeding season. The black-tailed native-hen, an Australian rail, can form flocks of as many as 20,000 individuals.

Breeding strategies vary across the rails. Many species are monogamous (muh-NAH-guh-mus), with one male mating with one female. Some species are polygamous (puh-LIH-guh-mus), meaning single males mate with multiple females. Other species are polyandrous (pah-lee-AN-drus), where a single female mates with multiple males. In some species, older siblings help their parents feed and care for younger siblings. Intraspecific brood parasitism is also common among the rails. This describes a strategy in which a female lays eggs in the nests of other females so that other individuals will feed and raise her young.

Many rails are territorial and will defend their territories from other individuals of the same species. To prevent serious injuries from actual fighting, territorial disputes between rails are decided using displays, characteristic postures or behaviors that help determine which individual would win in an actual fight.

Rails are shy, and generally stay in areas of dense vegetation. At night, they roost on the ground, hidden in dense vegetation, or, less commonly, in trees.

RAILS AND PEOPLE

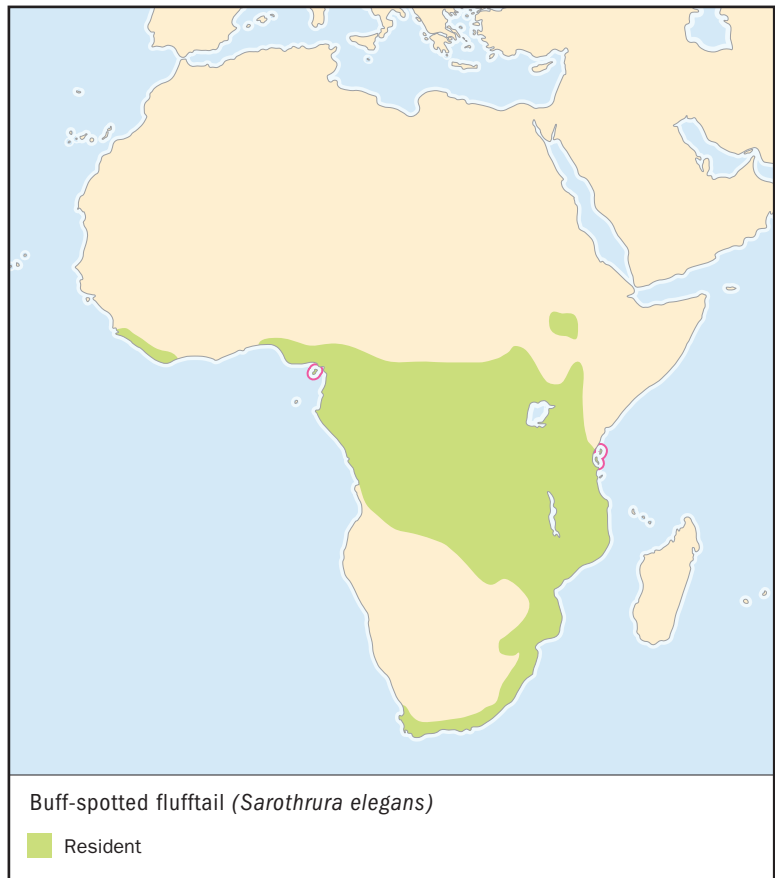
Many species of rails have been and continue to be hunted either for food or for sport. Rail eggs are also sometimes collected and eaten. Some species of rails are considered pests because they damage crops. The purple swamp hen appears in Egyptian wall paintings and was also considered sacred by the Greeks and Romans.

CONSERVATION STATUS

Of the 134 rail species in existence, thirty-three are considered threatened by the World Conservation Union (IUCN). Of these, four are Critically Endangered, facing an extremely high risk of extinction in the wild. Twelve are Endangered, facing a

very high risk of extinction, and sixteen are Vulnerable, facing a high risk of extinction. One, the Guam rail, is Extinct in the Wild. No fewer than twenty rail species have become extinct since 1600, the majority of them flightless species on islands. Threatened species have suffered population declines due primarily to habitat destruction. Some island species have also been severely affected by the introduction of animals such as cats, dogs, pigs, mongooses, and snakes.

SPECIES ACCOUNTS



BUFF-SPOTTED FLUFFTAIL *Sarothrura elegans*

Physical characteristics: The male buff-spotted flufftail has an orange-chestnut head and neck and spotted body. The female is golden brown in color with a spotted back and barred belly. Buff-spotted flufftails range from 6 to 6.7 inches (15 to 17 centimeters) in length and 1.4 to 2 ounces (39 to 61 grams) in weight.

Geographic range: Buff-spotted flufftails are found in Africa from Guinea east to the Democratic Republic of the Congo and Uganda and south to northern Angola, as well as from southern Sudan and Ethiopia to South Africa.



During the breeding season, male buff-spotted flufftails sing at night to attract females, sometimes for as long as twelve hours continuously. (Illustration by Wendy Baker. Reproduced by permission.)

Habitat: Buff-spotted flufftails are found in forests, but may also inhabit abandoned agricultural lands.

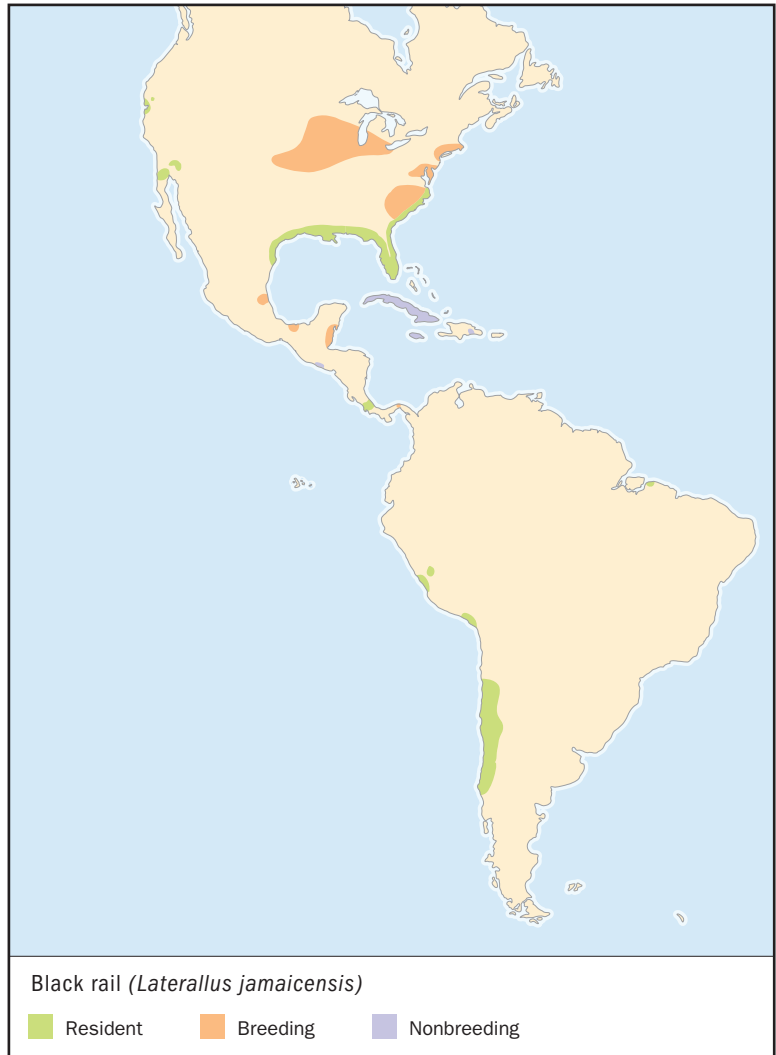
Diet: Buff-spotted flufftails eat primarily invertebrates, animals without backbones, such as insects and spiders. They forage on the ground.

Behavior and reproduction: Buff-spotted flufftails are highly territorial during the breeding season. Individuals are active during the day, although males sing to attract females at night, sometimes for as long as twelve hours continuously. Some buff-spotted flufftail populations migrate while others do not.

Buff-spotted flufftails are monogamous, and nests are built on the ground. Nests are dome-shaped and built from dead leaves or grass. The female lays three to five eggs at a time. Eggs hatch after fifteen to sixteen days, and the young are independent after nineteen to twenty-one days.

Buff-spotted flufftails and people: The buff-spotted flufftail's loud, hooting calls, which can last all night, are the source of local legends.

Conservation status: Buff-spotted flufftails are not threatened. ■



BLACK RAIL

Laterallus jamaicensis

Physical characteristics: Black rails are small, dark birds with a slightly reddish brown upper back and spots or bars on the lower parts of their backs and bellies. Females are slightly paler in color. Black rails range from 4.7 to 6 inches in length (12 to 15 centimeters) and from 0.7 to 1.6 ounces (20.5 to 46 grams) in weight.

Geographic range: Black rails have a scattered distribution, with populations in California, the eastern United States, portions of Central America, and western South America.

Habitat: Black rails live in marshes and moist grassland areas.

Diet: Black rails eat primarily small invertebrates such as insects and spiders. They will sometimes eat larger animals such as fish or tadpoles, as well as plant seeds.

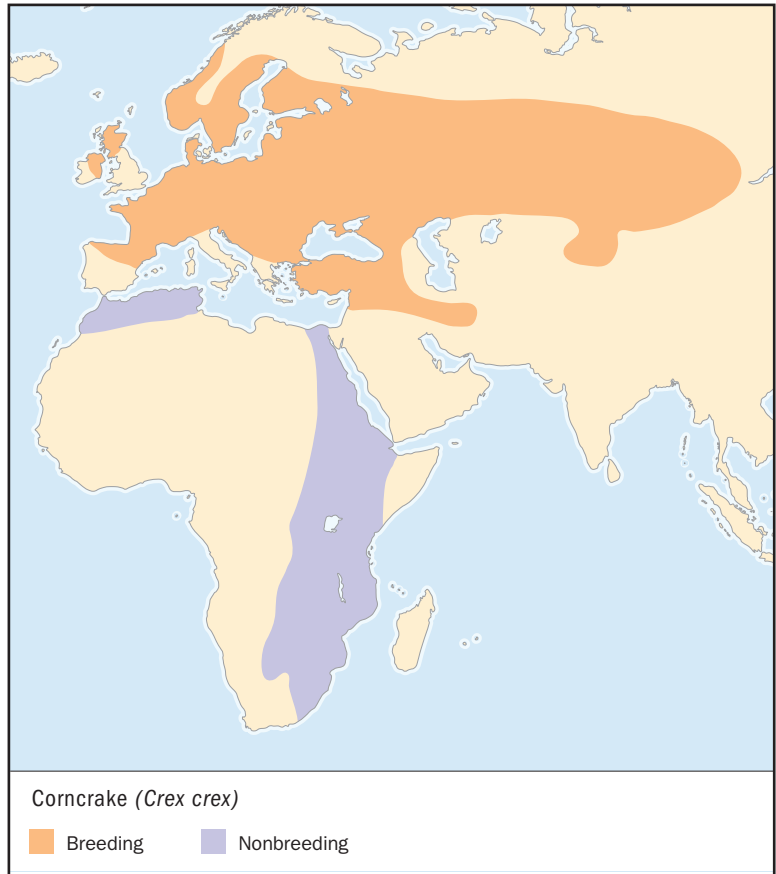
Behavior and reproduction: Black rails are territorial during the breeding season. Some populations migrate while others remain in the same place throughout the year. Most black rails are monogamous, although in rare instances a male may breed with multiple females (polygamy). In the United States black rails breed in the summer. In other parts of its range breeding occurs during the rainy season. Black rails nest in low vegetation, where they build a bowl-shaped nest out of grass. The nest is covered with a woven canopy. Females lay anywhere from two to thirteen eggs at a time. Eggs hatch after seventeen to twenty days.

Black rails and people: No significant interactions between black rails and humans are known.

Conservation status: One black rail subspecies, found in the Peruvian Andes, is considered Endangered, while the others are considered Near Threatened. In the United States, black rail populations declined greatly during the twentieth century, due largely to habitat loss. ■



Black rail populations in the United States have decreased because their habitats, marshes and grasslands, have been lost to development and farming. (Illustration by Wendy Baker. Reproduced by permission.)



CORNCRAKE

Crex crex

Physical characteristics: Corncrakes are a blue-gray color on the face, neck, and breast. The backs are a streaked brownish color. They range from 10.6 to 12 inches in length (27 to 30 centimeters) and from 4.6 to 7.4 ounces (129 to 210 grams) in weight.

Geographic range: Corncrakes breed in Europe and central Asia, then migrate to northern and eastern Africa for the winter.

Habitat: Corncrakes inhabit grasslands during both the breeding season and the winter.

Diet: Corncrakes eat insects, spiders, and other invertebrates as well as seeds and grass. They look for food under the cover of vegetation, rather than foraging in the open.

Behavior and reproduction: Corncrakes are particularly active in the morning and at dusk, although males may call all night. Corncrakes are serially polygamous, meaning males mate with multiple females, but have only one breeding partner at a time. Nests are cup-shaped and built on the ground, usually hidden in dense vegetation. Six to fourteen eggs are laid at a time, and hatch after sixteen to twenty days. Only females incubate eggs. Chicks become independent at ten to twenty days.

Corncrakes and people: Corncrakes are hunted for food. They are particularly vulnerable during their migration.

Conservation status: Corncrakes are considered Vulnerable due to the loss of much of their grassland habitat areas. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003

Taylor, P. B., B. Taylor, and B. van Perlo. *Rails: A Guide to the Rails, Crakes, Gallinules, and Coots of the World*. New Haven, CT: Yale University Press, 1998.

Web sites:

"Rallidae (Rails and Coots)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=46> (accessed on April 25, 2004)

"Family Rallidae (Coots and Rails)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Rallidae.html#Rallidae> (accessed on April 25, 2004)

"Crakes, rails, coots, gallinules." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/rallidae.html> (accessed on April 25, 2004)

SUNGREBES

Heliornithidae

Class: Aves

Order: Gruiformes

Family: Heliornithidae

Number of species: 3 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Sungrebes have long necks and slender bodies. They have brown backs and a long white stripe that extends down the side of the neck. Male and female sungrebes tend to have slightly different coloration on the heads and necks. The brightly colored bills of sungrebes are sharp and pointed, and the tail is long and broad. In one species, the African finfoot, the tail feathers are stiffened, and the tail is spread out on the water during swimming. All three species of sungrebes have brightly colored feet. These are orange in the African finfoot, green in the masked finfoot, and yellow with black stripes in the sungrebe.

GEOGRAPHIC RANGE

The African finfoot occurs in Africa, where it is found through most of sub-Saharan Africa. The sungrebe is a New World species found in parts of Mexico and through most of Central and South America. The masked finfoot is found in Asia, including portions of Bangladesh, India, Sumatra, and the Malay Peninsula.

HABITAT

All sungrebe species require overhanging trees or other forms of dense cover over aquatic bodies. They are found in swamps and other wetland habitats, as well as ponds, lakes, dams, and a wide variety of rivers and streams, from coastal creeks to mountain streams as high as 6,600 feet (2,000 meters) in elevation. Although sungrebes and finfoots are sometimes found

in fast-flowing streams, most prefer slow-moving currents or still water. Some populations inhabit flooded rainforests.

DIET

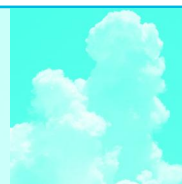
Sungrebes feed primarily on insects, particularly midgets, mayflies, and dragonflies. They may also eat beetles, grasshoppers, and flies, as well as some mollusks, crustaceans, worms, millipedes, and spiders. Occasionally they can eat larger animals such as frogs, tadpoles, or small fish. Sungrebes are also known to eat a small amount of plant material, such as seeds and leaves. Most of their food is found on the water surface, but sungrebes also forage in overhanging vegetation or along banks.

BEHAVIOR AND REPRODUCTION

Sungrebes may be solitary, that is, may live by themselves, or are found in pairs, generally male and female breeding partners, or family groups. Sungrebes are permanently territorial, meaning they defend their territories from other individuals of the same species during the breeding season as well as the nonbreeding season. Sungrebes are shy birds rarely seen by people. They usually swim close to cover and may hide either in vegetation or in the water, with their bodies underwater and their heads lowered, when they are disturbed. They are good swimmers but also capable walkers and climbers. Sungrebes tend to roost, or spend the night, in trees or bushes.

Although all three subgrebe species have distinctive calls, these are not often heard. The African finfoot makes a loud booming sound during breeding. The masked finfoot has a bubbling call. The sungrebe has a “eeyoo” call that it makes to warn other sungrebes away from its territory.

Sungrebes breed when water levels are high. All three species are monogamous (muh-NAH-guh-mus), meaning a single male breeds with a single female. Courtship rituals, which are characteristic behaviors individuals perform before mating, vary among the species. In the African finfoot, one individual raises and opens its wings while the other individual remains under cover and responds with a snapping noise. In sungrebes, potential mates swim



RIDING UNDER THE WING

In monogamous birds, where each male mates with only one female during the breeding season, it is common for males to help with nest building, incubating the eggs, and caring for hatched chicks. Sungrebe males do one additional thing for their chicks—after the chicks hatch, the male carries one under each wing, secured in a pocket of skin. Males can even carry them while flying.

in circles towards each other, raising their wings and lowering their heads in a characteristic manner. Both males and females participate in building the nest, which is generally a shallow bowl of sticks lined with dead leaves. Nests are generally built in areas of thick vegetation about 3 feet (1 meter) over water, often on top of debris that remains caught in branches. Usually, two to three eggs are laid at a time, and both parents incubate, or sit on, the eggs. Eggs hatch after ten to eleven days.

In the sungrebe, chicks are altricial (al-TRISH-uhl), that is, they hatch naked, without feathers, blind, and unable to move. Males carry the chicks in pockets of skin under the wings until they are better able to fend for themselves. In the African finfoot and the masked finfoot, the chicks are semi-precocial (semi-pree-KOH-shul), a state between altricial and precocial, fully developed. Although they cannot leave the nest immediately, as fully precocial chicks can, they generally leave the nest after a few days.

SUNGREBES AND PEOPLE

Masked finfoots are hunted for food. Their eggs and chicks may also be collected for food.

CONSERVATION STATUS

Masked finfoots are considered Vulnerable, facing a high risk of extinction in the wild. There are probably somewhere between 2,500 and 10,000 individuals left in the wild. Populations have suffered due to the loss of wetland habitats to agricultural or other human use, as well as hunting. The African finfoot is considered Vulnerable in South Africa, but may be in decline in other parts of its range as well. Because all three sungrebe species rarely come into contact with humans, population declines are often unlikely to be noticed.



SUNGREBE *Heliornis fulica*

SPECIES ACCOUNT

Physical characteristics: Sungrebes are black on top of the head and on the back of the neck. The throat is white, the back is brown, and the belly is pale in color. The males has a dark upper bill, whereas the female's upper bill is red. The lower bill is pale in both sexes. Sungrebes have yellow and black striped feet. Sungrebes vary from 10.2 to 13 inches (26 to 33 centimeters) in length and 4.2 to 5.3 ounces (120 to 150 grams) in weight.

Geographic range: Sungrebes are found in the New World, from southeastern Mexico through most of Central America and South America as far as Bolivia and northeastern Argentina.

Habitat: Sungrebes occupy river, stream, pond, and lake habitats in forested areas, usually with dense, overhanging vegetation.

Diet: Sungrebes eat primarily aquatic insects. They catch their food on the water surface, or, less frequently, on land.

Behavior and reproduction: Sungrebes are territorial throughout the year, with males defending a length of shoreline usually about 590 feet (180 meters) long. In the northern part of its range, sungrebes breed in the spring. Elsewhere, they breed during the rainy season. Females lay two to three eggs which hatch after ten or eleven days. Both parents help incubate the eggs. The male carries the chicks in pouches under the wings.

Sungrebes and people: No significant interactions between humans and sungrebes are known.

Conservation status: The sungrebe is not considered threatened. However, due to the extreme shyness of the species, it is uncertain how populations are doing. ■

FOR MORE INFORMATION

Books:

Ali, S., and S. D. Ripley. *Handbook of the Birds of India and Pakistan*. New York: Oxford University Press, 1983.

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Heliornithidae (Finfoots)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Heliornithidae.html#Heliornithidae> (accessed on April 28, 2004).

"Heliornithidae (Finfoots)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=47> (accessed on April 28, 2004).

"Sun-Grebes, Finfoots." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/heliornithidae.html> (accessed on April 28, 2004).

SUNBITTERN

Eurypygidae

Class: Aves

Order: Gruiformes

Family: Eurypygidae

One species: Sunbittern (*Eurypyga helias*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Sunbitterns range from 18 to 21 inches (46 to 53 centimeters) in length and 6.3 to 7.8 ounces (180 to 220 grams) in weight. They have long, slender necks and black heads with two extended white stripes above and below the eyes. The eyes are red in color. Their bills are long and straight. The upper part of the bill is black in color, while the lower bill is bright orange. Sunbitterns have orange legs. When they have their wings open, a bright sunburst-like pattern of black, yellow, and red markings appears. These are actually intended to frighten away potential predators. Sunbitterns also have long, broad fan-shaped tails marked with striking chestnut and black stripes. When the wings and tail are folded, the bright colors are concealed and the sunbittern blends in well with its environment, being either brown or chestnut-colored with black bars on the back, and paler on the neck and belly. Male and female sunbitterns tend to be fairly similar in appearance, though males are sometimes more brightly colored.

GEOGRAPHIC RANGE

Sunbitterns are found in the New World tropics in Central America and South America. They occupy most of the southern part of Central America south to western Ecuador, and South America east of the Andes Mountains through the Amazonian portions of Colombia, Venezuela, and Guineas, as well as portions of Brazil, Ecuador, and Peru.

HABITAT

Sunbitterns prefer forested habitats near permanent water sources. These include fast-flowing mountain streams,

slow-flowing rivers, pond areas, and swamps. Sunbitterns are generally found at altitudes between 300 and 4,000 feet (100 to 1,200 meters) although they have been seen at higher elevations as well.

DIET

Sunbitterns have a diverse diet including vertebrates, animals with backbones, such as small fish, tadpoles, eels, and frogs, as well as smaller animals such as spiders, flies, water beetles, cockroaches, katydids, dragonfly larvae, shrimp, crabs, earthworms, and moths. Sunbitterns hunt by walking slowly, looking for and following prey carefully with their necks pulled back, then quickly jabbing and spearing with their long bills. Much of the hunting is done in shallow water, although sunbitterns also forage along the forest floor. Sunbitterns have the unusual habit of washing their food before eating, particularly when they are feeding their young.

BEHAVIOR AND REPRODUCTION

Sunbitterns are often solitary, that is, they frequently live alone. However, they are sometimes found in pairs, usually male and female breeding partners. Sunbitterns are not particularly shy, but will fly to the low branches of trees if they are disturbed. Sunbitterns do not migrate, but stay generally in the same place throughout the year. However, individuals who live in dry areas may move short distances in order to find appropriate habitat.

Sunbitterns are known for their defensive posture, which they use to frighten away potential predators. The defensive posture involves opening the wings and rotating them forward to reveal the sunburst pattern, and raising and fanning the tail at the same time. This causes the sunbittern to appear to be a large and alarmingly colored bird. In order to protect a nest and chicks, adult sunbitterns will also perform a “broken-wing” display in which one wing is dragged along the ground as if broken. By drawing attention to what appears to be a helpless adult, sunbitterns are able to distract attention from the more vulnerable nest.

The sunbittern song is a high, ringing whistle and is sung most often in the morning. Sunbitterns also have an alarm call that is used to warn others of danger.



WELL-HIDDEN

When their bright wings and tails are folded, sunbitterns blend right into their environment. The barred black and brown feathers on the bird's back melt into the background of dappled sunlight under trees, which is where sunbitterns spend most of their time. They also walk slowly while they hunt for food along streams, bringing little attention to themselves.



Breeding in sunbitterns occurs during the rainy season. Courtship involves calls and singing duets as well as flight displays, head bobbing displays, preening, and begging displays. Both males and females participate in nest-building. The nest is usually built on a horizontal branch 3 to 23 feet (1 to 7 meters) above the ground and consists of a large bowl of decaying leaves, mud, and other plant material. More rarely, nests are built directly on the ground. The nest is usually placed under the cover of vegetation and close to water. The female lays two or three eggs at a time. These are pink in color, often with purplish-brown spots, and hatch after twenty-seven to thirty days. Chicks hatch already covered with down, fine fluffy feathers, and with their eyes open. One chick often hatches one or two days before the other. Both males and females incubate, or sit on, the eggs, and both help feed and take care of the chicks once they hatch. Chicks are able to stand and flap their wings a week after birth, and leave the nest after approximately thirty days.

SUNBITTERNS AND PEOPLE

Because sunbitterns are exceptionally good at catching flies and spiders, sunbittern chicks are sometimes taken from their nests and raised as pets. The birds are also hunted occasionally.

CONSERVATION STATUS

The sunbittern is not considered threatened at this time. However, their populations are declining in many parts of their range due to habitat damage and destruction.

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Eurypygidae (Sunbittern)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=49> (accessed on April 28, 2004).

"Family Eurypygidae (Sunbittern)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Eurypygidae.html#Eurypygidae> (accessed on April 28, 2004).

"Sun-bittern." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/eurypygidae.html> (accessed on April 28, 2004).



The sunbittern's defensive posture, rotating the wings forward, causes the sunbittern to appear to be a large and alarmingly colored bird.
(© François Gohier/Photo Researchers, Inc. Reproduced by permission.)

TRUMPETERS

Psophiidae

Class: Aves

Order: Gruiformes

Family: Psophiidae

Number of species: 3 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Trumpeters range from 17 to 21 inches (43 to 53 centimeters) in length, and are approximately 2.2 pounds (1 kilogram) in weight. They have black feathers and, depending on the species, a paler patch of gray, green, or white on the back from the folded inner wing feathers. Trumpeter chicks, which are colored to blend into their environments, have brown and black stripes. Trumpeters have hunched backs, long necks which are usually held close to the body, small heads, long legs, and short tails. The bill is short and sharp. Males and females are similar in appearance, although males tend to be larger in size.

GEOGRAPHIC RANGE

Trumpeters are found in northern South America, including portions of Venezuela, Colombia, Ecuador, the Guianas, Peru, Bolivia, and Brazil.

HABITAT

Trumpeters live in areas of tropical rainforests where there are many trees and little ground cover. Because they are primarily fruit eaters, their habitats generally have many fruit trees.

DIET

Trumpeters eat primarily fruit, with their favorites being soft fruits with thin skins. Trumpeters rely largely on monkeys to knock fruit onto the ground, since they are not able to fly up to high trees themselves. They also take advantage of fruits that grow on low

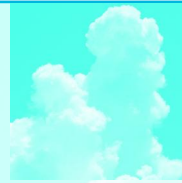
bushes. Trumpeters also eat large numbers of insects off the forest floor, particularly beetles, ants, and termites. On occasion they will also eat larger animals, such as small snakes.

BEHAVIOR AND REPRODUCTION

Trumpeters are found in large groups which include a single dominant female and several males whom she breeds with, as well as their young. All adult trumpeters participate in feeding and caring for the young. This reproductive system, which is rare among birds, is known as cooperative polyandry (PAH-lee-andree). As with many species where many individuals live together, dominance relations, a system where some individuals have higher rank and others have lower rank, are well established among individual trumpeters. Subordinate individuals in the group, those with lower rank, often crouch and spread their wings in front of the dominant individuals. Trumpeters also preen each other, or clean each other's feathers, feed each other, and engage in mock fights. All these behaviors help to strengthen bonds between individuals in the group.

Groups of trumpeters are highly territorial, defending their territories against other trumpeters. In order to find enough food during the dry season, trumpeter groups require large territories. When a group of trumpeters finds other trumpeters in their territory, they sneak up on the intruders, then scream the loud, distinctive calls which give trumpeters their name. Fights involve kicking and pecking, and continue until the intruders leave the territory. At night, trumpeters roost in trees, sometimes in branches as high as 30 feet (9 meters) off the ground. Even at night, trumpeters make their loud territorial calls every few hours.

A single dominant female in the trumpeter group mates with as many as three dominant males. All adults help to feed and care for the young. Trumpeters like to build their nests in tree cavities, holes in trees which have been dug and abandoned by other birds. The nest is built from sticks. Before the act of mating takes place, the male feeds the female. The female then walks in a circle showing her back end while the male follows. Generally, the female lays three white eggs at a time. All the



FOOD, SOCIABILITY, AND TERRITORIALITY

Trumpeters are social birds, found in close-knit groups of as many as a dozen individuals. These usually consist of a single dominant female, up to three dominant males, and their young. It is believed that trumpeters form large groups to defend their large territories from other groups of trumpeters. The large territories, in turn, are necessary for trumpeters to find as much food as they need.

adults help incubate, or sit on, the eggs until they hatch, although the majority of the incubation is performed by the female and the dominant male. Chicks depend on adults to feed them for several weeks. They are unable to fly at first, so roost, or spend the night, close to the ground rather than high in trees like adult trumpeters. Because of this, many are eaten by snakes, predatory birds, and other species. Only about half the trumpeter chicks that hatch survive to become adults.

TRUMPETERS AND PEOPLE

Trumpeters interact with humans in a variety of ways. They are kept as pets in some parts of their range. Some people use trumpeters in chicken coops to alert humans when there are snakes. Trumpeters are also hunted for food in some areas. Because trumpeters tend to stay with their group, even in the face of danger, they often make easy targets for hunters.

CONSERVATION STATUS

Trumpeters are not considered threatened. However, because their rainforest habitats are being destroyed in many parts of their range, and because trumpeters require large territories in order to find enough food, many populations are declining. In addition, some of the monkey species which trumpeters depend on to obtain fruit are in trouble because of habitat loss and hunting. This is harming trumpeter populations as well.



COMMON TRUMPETER

Psophia crepitans

SPECIES ACCOUNT

Physical characteristics: Common trumpeters are 18 to 20 inches (42 to 52 centimeters) in length and 2 to 3 pounds (1 to 1.5 kilograms) in weight. They are dark in color with a patch of light gray on the back. They have long legs and a long neck. Young common trumpeters are dark gray with reddish stripes.

Geographic range: Common trumpeters are found in northwestern Brazil as well as portions of Colombia, Ecuador, Peru, Venezuela, and the Guianas.

Habitat: Common trumpeters are found in dense areas of tropical rainforest.

Diet: Common trumpeters eat fruit, mostly that which has been knocked to the ground by monkeys. They also eat some insects, particularly beetles, ants, and termites.

Behavior and reproduction: The common trumpeter is generally found in groups of three to twelve individuals. A single dominant female mates with as many as three dominant males. Three eggs are laid at a time, usually in a hole in a tree. Eggs hatch after approximately twenty-eight days. All adults in the group help in feeding and caring for the offspring.

Common trumpeters and people: Common trumpeters are sometimes hunted for food.

Conservation status: The common trumpeter is not considered threatened. However, populations have been declining due to the loss of tropical rainforest habitat as well as hunting. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Psophiidae (Trumpeters)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Psophiidae.html#Psophiidae> (accessed on April 28, 2004).

"Psophiidae (Trumpeters)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=45> (accessed on April 28, 2004).

"Trumpeters." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/psophiidae.html> (accessed on April 28, 2004).

SERIEMAS

Cariamidae

Class: Aves

Order: Gruiformes

Family: Cariamidae

Number of species: 2 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Seriemas range in size from about 28 to 35 inches (70 to 90 centimeters) in length and 2.6 to 3.3 pounds (1.2 to 1.5 kilograms) in weight. They have long legs, long tails, long necks, and short, rounded wings. Seriemas have sturdy, hooked bills that resemble those of hawks. Their backs and necks are light brown in color, whereas the belly is pale or white. Male and female seriemas are similar in size and general appearance.

GEOGRAPHIC RANGE

Seriemas are found in central and eastern South America, from portions of Brazil to as far south as Argentina.

HABITAT

Seriemas are found in grassland habitats as well as areas of open forest or brushland.

DIET

Seriemas are omnivorous, meaning that they eat both plant and animal matter. They hunt a wide variety of prey, including small animals such as insects, snails, and worms, as well as larger animals such as rodents, snakes, and lizards. These birds frequently smash medium-sized prey, such as rodents, against rocks to make them easier to swallow whole. They tear larger prey into smaller pieces using their strong, sharp bills. Seriemas hunt during the day by stalking, or quietly following, potential prey. They will also eat some fruit and other plant matter.

BEHAVIOR AND REPRODUCTION

Seriemas are often found either alone or in pairs, made up of male and female mates. Sometimes larger groups, consisting of parents with their offspring, are also seen. They spend most of the day on the ground hunting for food. They spend the night in trees. Seriemas tend to run away rather than fly away when threatened. Among birds, they are very fast runners and can achieve speeds as high as 37 miles per hour (60 kilometers per hour). Their call has been described as a yelping noise. Seriemas often stand in trees or on top of termite mounds to call, which helps the call travel further.

Seriemas are territorial, that is, they defend areas of land from other members of the same species. Disputes over territories are decided by intense calling as well as kicking. Offspring often help their parents defend territories by calling.

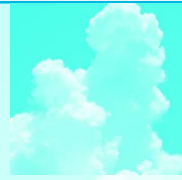
Seriemas breed during the rainy season, generally between September and May each year. To convince females to mate, male seriemas perform struts and leaps and also show the normally hidden feathers of their wings and tails. Both the male and female help in building the nest, which is made from sticks and twigs and lined with either clay or cattle dung. Nests are usually built in trees and may be anywhere from 3 to 30 feet (1 to 9 meters) above the ground. The female lays two or three eggs at a time, and these hatch after anywhere from twenty-four to thirty days. Offspring are able to leave the nest after two weeks, and reach adult size at five months of age.

SERIEMAS AND PEOPLE

Seriemas are sometimes hunted for their meat. They are also used by humans to guard chicken coops, since they will make loud warning calls if predators approach. Seriemas are also believed to benefit humans by killing a large number of venomous snakes.

CONSERVATION STATUS

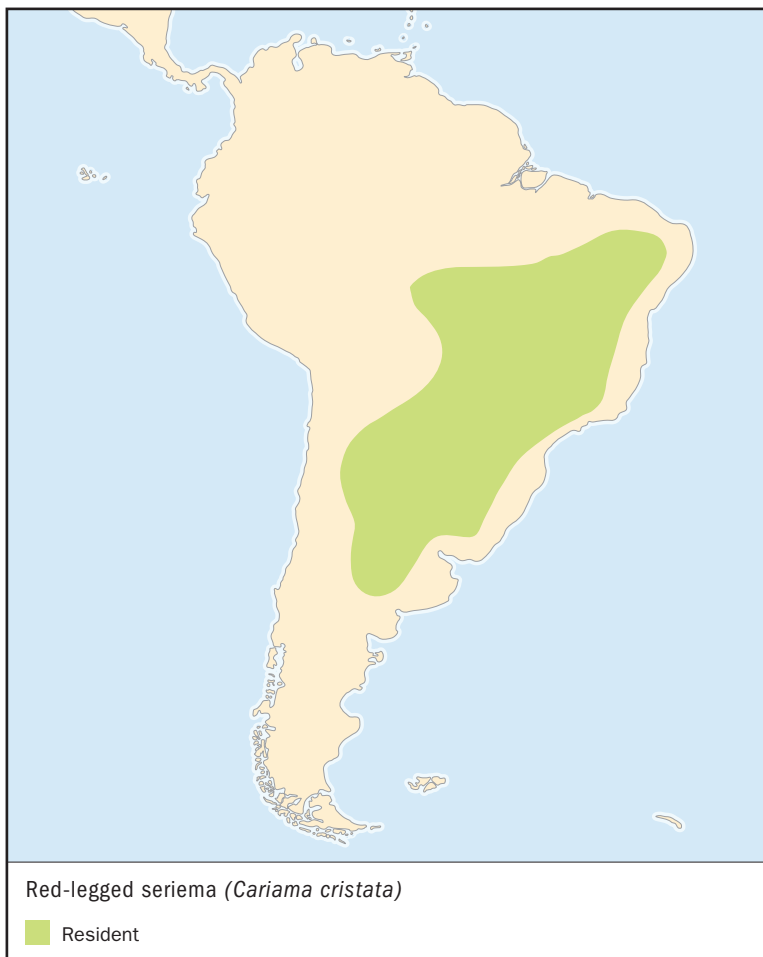
The two species of seriemas are not currently considered threatened. However, their populations are declining in some areas due to hunting and habitat destruction.



DANGEROUS FOOD

Snakes are part of the diet of both species of seriemas. Unlike many snake-eaters, however, the black-legged seriema appears to be unable to tell the difference between poisonous snakes and non-poisonous snakes. They are not immune to snake venom and are therefore sometimes killed by their intended prey. Farmers sometimes keep them in chicken coops to kill snakes, as well as to give warning when predators approach.

SPECIES ACCOUNT



RED-LEGGED SERIEMA *Cariama cristata*

Physical characteristics: The red-legged seriema has, as its name suggests, red legs. It also has a red bill. The eyes are yellow and surrounded by a patch of featherless blue skin. The tip of the tail is white in color. The feathers are generally brownish on the back and pale on the belly. The red-legged seriema also has a 3- to 4-inch (7- to 10-centimeter) crest of stiffened feathers on top of its head. Males and females are generally similar in appearance, although the males are slightly larger than the females. Juvenile seriemas have black bills rather than red ones.

Geographic range: The red-legged seriema is found in central and eastern Brazil as well as portions of Paraguay, Bolivia, Uruguay, and northeastern Argentina.

Habitat: The red-legged seriema inhabits grassland habitats, as well as open scrub or brushland areas and the edges of wooded forests.

Diet: Red-legged seriemas forage, or hunt for food, in pairs or small groups. They have a diverse diet including animals such as insects, worms, small mammals, frogs, snakes, and lizards, as well as fruit and other plant material. Red-legged seriemas will also eat either the eggs or chicks of other bird species. Some prey are smashed against rocks to make them easier to swallow whole.

Behavior and reproduction: The red-legged seriema spends much of its time on the ground. It rarely flies but prefers to run away from danger. However, they do roost, or spend the night, in trees. Red-legged seriemas sunbathe—they lie on the ground on their sides and appear, sometimes, to be dead. Red-legged seriemas have very loud calls that can be heard as far as a mile away. The call is described as sounding

like the yelp of a dog. Calling generally occurs in the morning, as a male and female pair cry out to each other. The purpose of the calling is to defend their territory from other members of the same species.

Red-legged seriemas are monogamous, that is, a single male mates with a single female. They build their nests as high as 10 feet (3 meters) off the ground, usually in a tree. Nest building is a long process for this species, taking up to a month. Both the male and female participate in nest building. Before mating, males show off their feathers by extending their wings. They also strut, walking around with their heads down and their crest of feathers up. The female red-legged seriema lays two eggs at a time. Both parents help incubate, or sit on, the eggs, which hatch after twenty-five to twenty-eight days. Chicks are able to fly after approximately one month.

Red-legged seriemas and people: Humans sometimes use red-legged seriemas in their chicken coops, because they will give an alarm cry if predators approach. Red-legged seriemas are also hunted for their meat.

Conservation status: The red-legged seriema is not currently considered threatened. However, it is declining or disappearing from parts of its range. It is now extremely rare in Uruguay. Argentine populations of red-legged seriemas appear to be declining due to hunting and habitat destruction. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Cariamidae (Seriemas)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=50> (accessed on April 12, 2004).

"Family Cariamidae (Seriema)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Cariamidae.html#Cariamidae> (accessed on April 12, 2004).

"Seriemas." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/cariamidae.html> (accessed on April 12, 2004).

family CHAPTER

BUSTARDS

Otididae

Class: Aves

Order: Gruiformes

Family: Otididae

Number of species: 26 species

PHYSICAL CHARACTERISTICS

Bustards vary in size from 15 to 47 inches (40 to 120 centimeters) in length. They are among the heaviest flying birds, weighing 1 to 42.2 pounds (0.45 to 19 kilograms). Male bustards are generally larger than females, although there is less difference between the sexes in smaller bustard species. Bustards have stout bodies with long legs and long necks. The bills tend to be short and straight. Bustards have large wings and small feet with no hind toe. Since Bustards do not perch on tree branches, preferring instead to remain on the ground, hind toes are not needed. The large wings are helpful when flying away from potential predators.

Bustards are generally colored to blend in with their environments. The back is brownish, with either white or dark bellies. Some bustard species have white or black patches on the wings, which are hidden when the wings are folded and only revealed during flight. In some species of bustards males and females are similarly patterned, while males are brighter in other species. In a number of bustards, males also have long feathers on the head, neck, or chest that are used to attract females.

GEOGRAPHIC RANGE

Bustards are found across much of the Old World, including Africa, Europe, and Asia, as well as in Australia.

HABITAT

Bustards are found primarily in grassland habitats with low vegetation where they are able to look out over long distances.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**



SHOWY MALES

In many bustard species, males have special feathers that they use in courtship displays during the breeding season to attract females. These males put all their effort into mating with as many females as possible. They do not help with nest-building, with incubating the eggs, or with feeding or caring for the chicks once they hatch.

Some bustards occupy taller grasslands or even slightly wooded areas. Bustards are also frequently found in cultivated fields.

DIET

Bustards are omnivores, consuming both plant and animal matter. They are opportunistic feeders who are often able to take advantage of any food. In most species, the diet consists mostly of plant matter, including leaves, shoots, flowers, roots and bulbs, fruit, and seeds. Individuals that occupy cultivated areas frequently eat crops as well. Bustards eat insects such as beetles and grasshoppers. Insects are a particularly important part of the diet during the breeding season, while chicks are being fed. Bustards sometimes eat larger

animals as well, such as reptiles and rodents. In most cases, however, these animals are killed during fires or by traffic, rather than hunted by the bustards themselves.

Bustards are often seen foraging, or searching for food, near large herds of grazing mammals. This is probably because there is less danger from predators near other individuals. In addition, bustards may eat the insects which have been disturbed by the mammals.

BEHAVIOR AND REPRODUCTION

Bustards range from solitary, or, living alone, to highly social, forming groups of as many as thousands in the case of the little bustard. Bustards that occupy semi-desert habitats generally tend to be more solitary. Many species of bustards migrate, moving from a breeding habitat to a wintering habitat. Asian bustard species, in particular, frequently migrate to avoid harsh winter conditions.

Bustards often breed during the rainy season in their habitat. Males perform elaborate courtship displays to attract females. These can involve booming calls, showing off long feathers that only the males possess, fanning out the tail, and performing leaps. Males generally do not participate in either nest building, incubating (warming) the eggs, or raising chicks. The female lays anywhere from one to six eggs at a time. These hatch after twenty to twenty-five days. Bustard young are

precocial (pree-KOH-shul), meaning that they hatch at a fairly advanced stage of development. They are covered with down and are able to move, usually walking within a few hours of hatching.

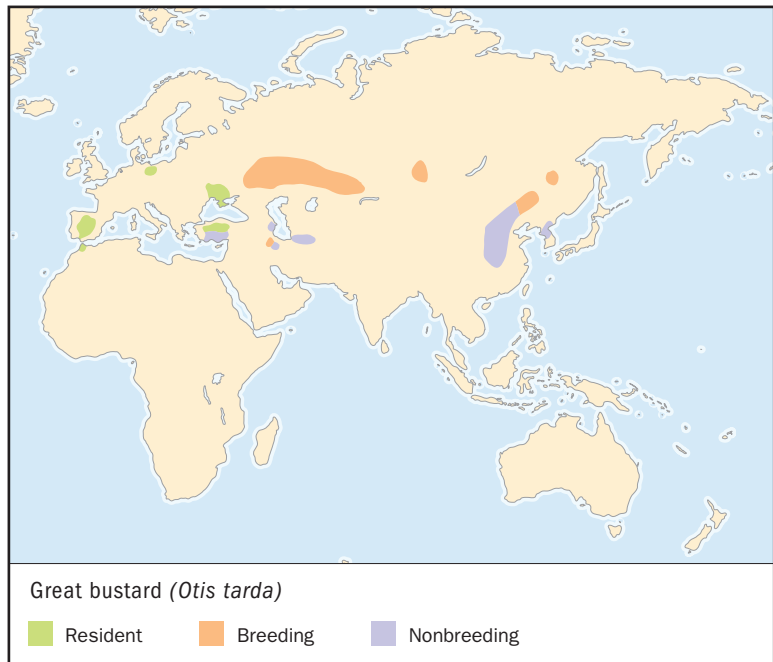
BUSTARDS AND PEOPLE

Bustards play an important role in agriculture in some parts of their range by eating large numbers of insect pests. On the other hand, they are hunted in some parts of the world for food or sport. (In Asia, hunting has caused population declines in several species.) Some hunters use trained falcons to hunt bustards.

CONSERVATION STATUS

Of the twenty-six species of bustards in existence, four are considered Threatened with extinction and six are considered Near Threatened, in danger of becoming threatened. Most other species are also declining. Bustards are threatened primarily due to hunting (particularly in India and Indochina), habitat destruction, and pesticide use.

SPECIES ACCOUNTS



GREAT BUSTARD *Otis tarda*

Physical characteristics: Male great bustards reach lengths of 41 inches (105 centimeters) and can weigh between 13 and 40 pounds (5.8 to 18 kilograms). Females are smaller, at 30 inches in length (75 centimeters) and 7 to 12 pounds (3.3 to 5.3 kilograms) in weight. Great bustards have black and gold barred backs and tails and white bellies. The head is pale blue-gray in color in females and nonbreeding males. Breeding males have white and rust colored feathers on the neck and long white barbs on the chin.

Geographic range: The great bustard has a scattered distribution and is found in portions of Morocco, Spain, Portugal, Germany, Hungary, Ukraine, Turkey, Iran, Russia, Syria, Uzbekistan, Tajikistan, Mongolia, and China.

Habitat: The great bustard occupies short-grass plains.

Diet: Great bustards eat plant material and insects. Sometimes they will eat larger animals such as reptiles, amphibians, and the chicks of other species.

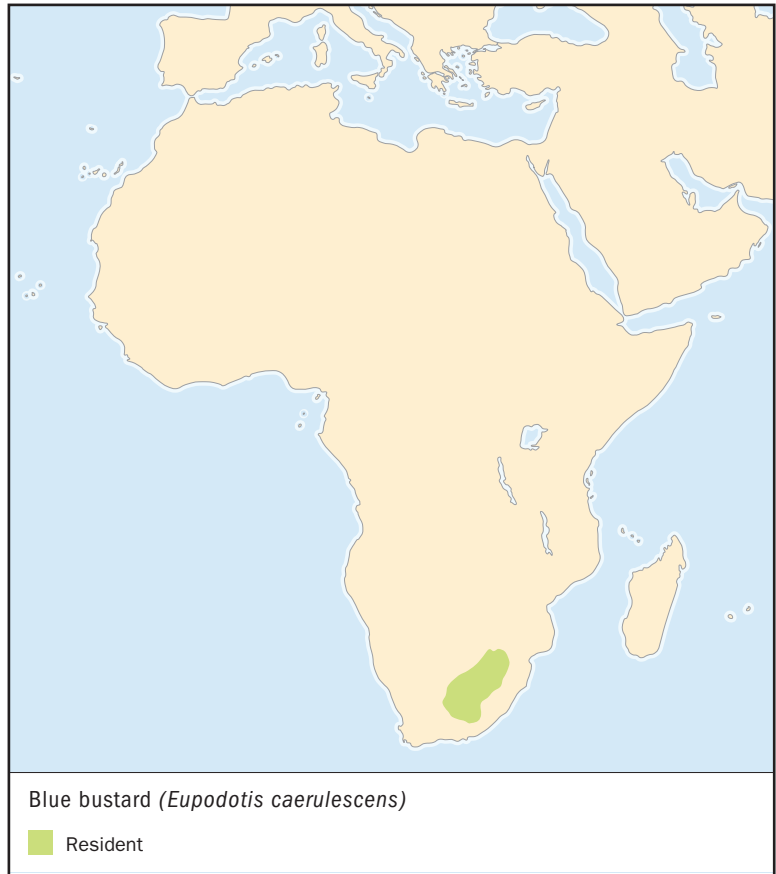


Great bustards live in large groups throughout Europe and Asia, with the males and females found in separate groups. (Illustration by Bruce Worden. Reproduced by permission.)

Behavior and reproduction: Great bustards live in large groups, with the males found in separate groups from the females. Some great bustards are migratory, while others remain in the same place year-round. During the breeding season, males perform elaborate courtship displays, characteristic behaviors intended to attract female mates. Females lay two or three eggs at a time. These hatch after about twenty-five days. Chicks are able to fly after between thirty and thirty-five days.

Great bustards and people: In Europe, great bustards sometimes appeared on family insignias. The great bustard is also currently the symbol of a grassland conservation program.

Conservation status: The great bustard is considered vulnerable. Declines are primarily due to habitat destruction, pesticide use, and hunting. ■



BLUE BUSTARD

Eupodotis caerulescens

Physical characteristics: The blue bustard has a brown back and blue-gray neck and belly. It is about 21.5 inches (55 centimeters) in length and 2.5 to 3.5 pounds (1.1 to 1.6 kilograms) in weight.

Geographic range: Blue bustards are found in eastern and central South Africa and in Lesotho.

Habitat: Blue bustards are found in grasslands as well as in cultivated fields. They are a high altitude species that is generally found above 4,900 feet (1,500 meters).

Diet: Blue bustards eat plant matter as well as insects and larger animals such as small reptiles.

Behavior and reproduction: Blue bustards are found in small groups of between two and six individuals. Blue bustard groups are territorial and defend their territories against other members of the same species. Blue bustards do not migrate but remain in the same place year-round. Breeding generally occurs in October and November. One to three eggs are laid by the female, and hatch after a period of twenty-four to twenty-eight days. Young remain with their parents for as long as two years.

Blue bustards and people: No significant interactions between blue bustards and people are known.

Conservation status: The blue bustard is currently considered Near Threatened. Population declines are generally due to habitat loss as grasslands are converted for use in agriculture. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Volume 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Johnsgard, P. A. *Bustards, Hemipodes and Sandgrouse: Birds of Dry Places*. Oxford, U.K.: Oxford University Press, 1991.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Otididae (Bustards)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=51> (accessed on April 13, 2004).

"Family Otididae (bustards)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Otididae.html#Otididae> (accessed on April 13, 2004).

"Bustards." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/otidae.html> (accessed on April 13, 2004).

GULLS, TERNS, PLOVERS, AND OTHER SHOREBIRDS

Charadriiformes

Class: Aves

Order: Charadriiformes

Number of families: 13 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Birds of the order Charadriiformes range in size from 0.06 to 4.4 pounds (25 grams to 2 kilograms). They vary greatly in body length, body shape, leg length, and bill shape, making generalizations about their physical characteristics difficult.

GEOGRAPHIC RANGE

Charadriiforms are found worldwide, including all seven continents.

HABITAT

Species in the order Charadriiformes occupy diverse habitats. They are generally found near water, whether coastal, inland, or on the ocean. Many charadriiforms inhabit wetland areas, both marine and freshwater. Others spend large amounts of time in or near the ocean.

DIET

As a group, charadriiforms range greatly in their diet and feeding strategies. Because of their use of aquatic habitats, many Charadriiformes species eat primarily fish. Among the fish-eaters, there are various methods for pursuing prey. The terns, for example, dive from the air into water to catch fish near the surface of the ocean. Alcids (auks, puffins, and murres) are good swimmers and swim underwater after their prey. Skimmers fly low over the water and scoop up fish from near the surface.

Other Charadriiformes have a diet formed primarily of insects and other invertebrates. Plovers search for insects and

phylum

class

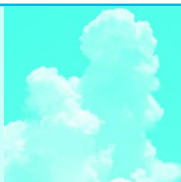
subclass

● **order**

monotypic order

suborder

family



COLONIAL NESTERS

Colonial nesters are species in which large numbers of individuals build their nests and raise their young in a single location. Among the Charadriiformes, the gulls, terns, and alcids are particularly known for their colonial nesting habits. During the breeding season, colonies can range in size from several hundred individuals to as many as hundreds of thousands of birds. Charadriiformes are able to gather in such large numbers because the habitats they prefer tend to be extremely rich with food resources.

other prey using their eyes, and then pick them from the ground with their short bills. Most sandpipers, on the other hand, rely largely on the sense of touch, using their long, sensitive bills to locate prey hidden in mud.

Plants and other vegetable matter form an important part of the diet of some Charadriiformes species as well. Sheathbills, for example, eat large amounts of algae (AL-jee). Plains-wanderers eat primarily seeds. Seed-snipes, despite their name, eat primarily buds, leaf tips, and small green leaves.

BEHAVIOR AND REPRODUCTION

Some species of Charadriiformes do not migrate, remaining instead in the same area throughout the year. Other charadriiforms, however, do migrate, traveling from one area to another and back during the course of the year. Migrations generally occur between breeding grounds in the spring or summer and wintering grounds. Among the charadri-

iforms, shorebirds and terns are particularly well-known for their long, difficult migrations. The Arctic tern travels more than 18,000 miles each year (28,960 kilometers) between its breeding areas in the Arctic and its wintering areas in the Southern Hemisphere. The Pacific golden plover migrates between Alaska and Hawaii, a distance of 2,200 miles (3,540 kilometers), in less than two days.

Many species of charadriiforms can be found in large flocks, either during the breeding or winter season. Gulls, terns, and alcids are regularly found in groups as large as a hundred thousand individuals during the breeding season. Even larger collections of charadriiforms are found during migrations, or during the winter. In the Copper River Delta in Alaska, as many as five million shorebirds may be seen during their spring migration.

The majority of Charadriiformes species are monogamous (muh-NAH-guh-mus), meaning that a single male mates with a single female during the breeding season. In some species, individuals keep the same mate from one breeding season to the next. In monogamous Charadriiformes, both male and female

help defend the nest and take care of young chicks once they hatch. Other charadriiforms have more unusual breeding systems. The jacanas are polyandrous (pah-lee-AN-drus), with a single female mating with multiple males. Still other charadriiforms, such as many species of sandpipers, are polygamous (puh-LIH-guh-mus), with a single male mating with multiple females.

Charadriiformes tend to build fairly simple nests, often just a hollow in the ground lined with a few pebbles or pieces of vegetation. Some charadriiform seabirds nest in rocky cliff areas, and lay their eggs directly on rock ledges without building any nest at all. The other end of the spectrum, some murrelets and sandpipers build nests in trees or use nests that have been built and abandoned by other bird species. Generally, females lay between one and four eggs at a time. Eggs hatch after a period of three weeks or longer. Some Charadriiformes, including most shorebirds species, have precocial chicks. These hatch at a fairly advanced stage of development, covered with down and able to move. Precocial chicks are usually able to leave the nest soon after they hatch. Others, such as most seabirds, have altricial chicks, which hatch at a less developed state. These hatch blind and without feathers, and usually stay in the nest for a longer period of time.

GULLS, TERNS, PLOVERS, OTHER SHOREBIRDS, AND PEOPLE

Humans have hunted many species of charadriiform birds for meat, feathers, oil, and eggs. Because Charadriiformes are often found in large flocks during breeding, migration, or the winter season, they have frequently made easy targets for hunters. For example, between 1988 and 1989 alone, some 300,000 to 400,000 thick-billed murres were killed in Greenland.

CONSERVATION STATUS

Of the 343 species of Charadriiformes, thirty-four are currently considered Threatened, in danger of extinction, by the World Conservation Union (IUCN). Threatened species have been affected by habitat destruction and damage (particularly



HUNTERS AND CHARADRIIFORMES

Because different species of Charadriiformes gather in large numbers during breeding, migration, or wintering seasons, they are frequently attractive targets for hunters. Many species have been hunted for their meat, feathers, oil, and eggs. Hunting by humans is believed to have resulted in the extinction of at least two Charadriiformes, the Eskimo curlew and the great auk. Hunting continues to contribute to the threatened state of many other charadriiform species.

in wetland areas as well as rivers and streams), pollution, hunting, and other factors. Some species have declined as overfishing by humans eliminates important seabird prey populations. Finally, certain Charadriiformes species are periodically devastated by large oil spills.

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/families.phtml> (accessed on April 15, 2004).

"Order Charadriiformes (Shorebirds and Relatives)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Charadriiformes.html> (accessed on April 15, 2004).

"Birds of the World." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/families.htm> (accessed on April 15, 2004).

family CHAPTER

JACANAS Jacanidae

Class: Aves

Order: Charadriiformes

Family: Jacanidae

Number of species: 8 species

PHYSICAL CHARACTERISTICS

Jacanas (juh-KAH-nuhz) vary from about 6 to 23 inches (15 to 58 centimeters) in length and from 1.4 to 9.7 ounces (40 to 275 grams) in weight. Jacanas have long, slender necks and extremely long toes and claws, as long as 4 inches (10.2 centimeters) in certain species. Their large feet allow them to balance on and move over lily pads and other floating vegetation, a practice that has given the jacana nicknames such as “lily trotters” and “Jesus birds.” Jacanas also have bony spurs that jut out from their wings. These are used in battles with other jacanas, as well as to defend individuals from potential predators, animals that hunt them for food. Jacanas are unusual among birds in that the females are larger than the males, weighing, in some cases, as much as 60 percent more.

Jacanas are generally black or reddish brown in color. Most species have very bright wings and will sometimes spread their wings suddenly to frighten off potential predators. Jacanas also have bright patches of feathers on their foreheads. Male and female jacanas have similar coloration. Young jacanas, however, generally have brown backs and pale bellies, colors that allow them to blend into their environments well. Chicks develop adult coloration after about a year.

GEOGRAPHIC RANGE

Jacanas are found in the Old World and New World tropics, including parts of Central America, South America, Africa, Asia, Australia, and Madagascar.

phylum

class

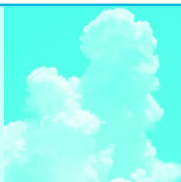
subclass

order

monotypic order

suborder

▲ **family**



DOMINANT FEMALES

Jacana females are much larger than the males and are dominant over them. A single female breeds with up to four males during the breeding season, defending a large territory against other jacana females. Males are responsible for building the nest, sitting on the eggs, and caring for the chicks once they hatch. Females show their dominance to males by pecking at their necks and backs. To show his submission, the male crouches and lowers his head.

HABITAT

Jacanas inhabit aquatic environments such as marshes or ponds in open (rather than forested) areas. They prefer water bodies that are covered in vegetation, since they use floating vegetation for both feeding and shelter. Jacanas have also been found in flooded pastures or rice fields.

DIET

Jacanas eat primarily insects. They forage, or search for food, by floating on water lilies or other vegetation and turning over the large leaves with their long toes. They then eat the insects or seeds caught in the water lily's roots. Jacanas also forage for seeds among the blades of marsh grasses. Rarely, they will eat larger prey such as small fish.

BEHAVIOR AND REPRODUCTION

Most jacanas do not migrate, but remain in the same place year-round. During the breeding season, they are generally found in pairs or small groups. During the non-breeding season, jacanas congregate in flocks of as many as several hundred individuals.

Jacanas are good swimmers and divers and frequently move into water to escape potential predators. In several species, jacana chicks have breathing holes at the ends of their bills that allow them to hide with most of their bodies underwater. The jacanas' swimming skills are particularly important during the molting season, when jacanas lose their flight feathers and are temporarily flightless.

A single female jacana mates with multiples males, usually between one and four. This breeding system, which is not very common in birds, is known as polyandry (PAH-lee-an-dree). The female jacana is significantly larger than the males and is responsible for defending the territories of her mates. When another female approaches, males call to their mate. Disputes between female jacanas are usually resolved using displays in which the wings are spread, showing off the sharp wing spurs, followed by physical fights if necessary. Physical fights involve jabbing with either the bill or the wing spurs. If the intruder

succeeds in chasing off the original female, she will generally kill any chicks from the previous matings so that the male jacanas will be free to tend new sets of eggs. The new female will also peck at the male's neck and back to show her dominance. Males crouch and lower their heads in response. Jacana territories are usually about the size of half a football field.

Jacanas generally breed during the rainy season. Males begin by building several potential nest sites. The female decides which to lay eggs in, or chooses a new site within the territory for a nest. Jacana nests typically consist of water lily leaves or other plant material on top of a mat of floating vegetation. The male and female flash their wings at each other before mating. Males are responsible for incubating, or sitting on and warming, the eggs. Generally, four eggs are laid at a time, and chicks hatch after twenty-two to twenty-eight days. Males are responsible for feeding the chicks and for protecting them. Males call to the chicks when there is danger and settle them under the wings. Males will also sometimes fake a broken wing in order to attract the attention of predators and allow the chicks to escape. Numerous predators prey on young jacanas, including the purple gallinule (a rail of the family Rallidae), snakes, otters, and turtles. Fewer than half of all jacana chicks make it out of the nest, and another half die before reaching adulthood.

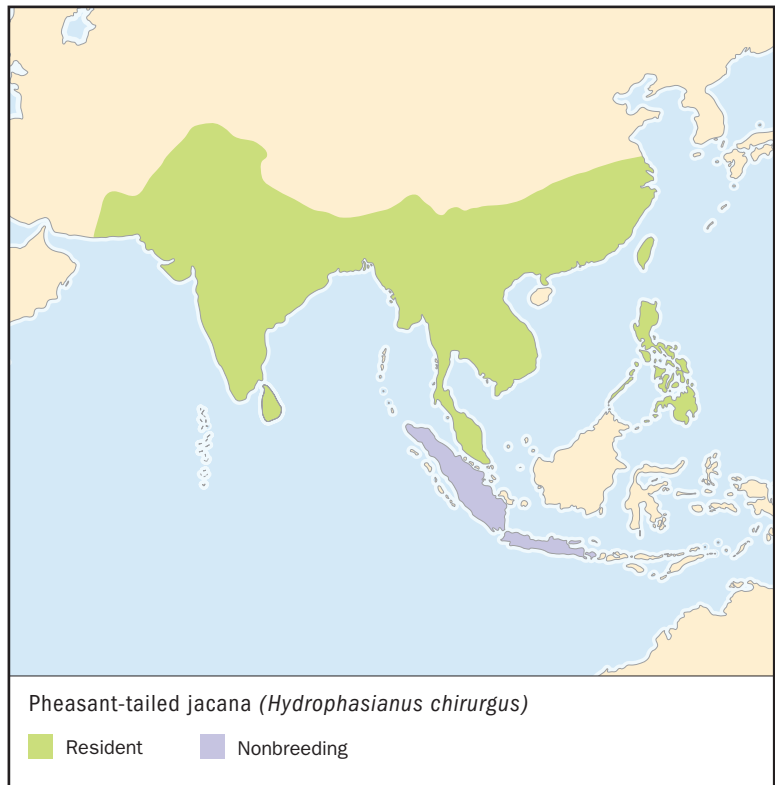
JACANAS AND PEOPLE

Jacanas live close to humans in many parts of their range and are therefore well-known to them.

CONSERVATION STATUS

No jacana species are currently considered threatened. However, wetland habitats are being drained for agricultural or other human uses in many parts of the world. Other populations have suffered due to pollution from pesticides.

SPECIES ACCOUNTS



PHEASANT-TAILED JACANA *Hydrophasianus chirurgus*

Physical characteristics: The pheasant-tailed jacana is the largest species in the group, measuring from 11 to 12.2 inches (28 to 31 centimeters) in length and weighing in at 4.8 to 8 ounces (126 to 231 grams). It has dark feathers with a yellow band around the neck and white wingtips. Males have long, brightly colored tail feathers during the breeding season.

Geographic range: The pheasant-tailed jacana is found in Asia, including portions of Pakistan, India, Nepal, Sri Lanka, Myanmar, China, Java, and the Philippines.

Habitat: The pheasant-tailed jacana inhabits marshes, ponds, and lakes with patches of floating vegetation.

Diet: The pheasant-tailed jacana eats primarily insects and other invertebrates, animals without a backbone.

Behavior and reproduction: Pheasant-tailed jacanas walk across floating vegetation with their large feet, only rarely taking to the air. They are polyandrous, with females having up to four mates at one time. Four eggs are laid by the female in each nest and hatch after twenty-two to twenty-eight days. Males are responsible for sitting on eggs and caring for chicks after they hatch. Fewer than half of all chicks survive to adulthood.

Pheasant-tailed jacanas and people: No significant interactions between pheasant-tailed jacanas and people are known.

Conservation status: This species is not considered threatened, although some populations in China and Taiwan have declined dramatically due to loss of wetland habitats. ■



AFRICAN JACANA

Actophilornis africanus

Physical characteristics: The African jacana ranges in length from 9 to 12.2 inches (23 to 31 centimeters) and in weight from 4 to 9 ounces (137 to 261 grams). African jacanas have brown, black, and white feathers and a blue patch on the forehead.

Geographic range: African jacanas are found in Africa south of the Sahara desert.

Habitat: African jacanas inhabit marshes, ponds, and lakes with mats of floating vegetation.



Diet: African jacanas eat primarily insects, other invertebrates, and the seeds of aquatic plants.

Behavior and reproduction: African jacanas breed during the rainy season. Females defend territories and mate with as many as four different males. Four eggs are laid at a time and hatch after twenty-two to twenty-eight days.

African jacanas and people: No significant interactions between African jacanas and people are known.

Conservation status: The African jacana is not currently considered threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

African jacanas walk across the floating vegetation in marshes, ponds, and lakes with their large feet, only rarely taking to the air. (© Nigel Dennis/Photo Researchers, Inc. Reproduced by permission.)

Web sites:

"Jacanidae (Jacanas)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=52> (accessed on April 16, 2004).

"Family Jacanidae (Jacanas)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Jacanidae.html#Jacanidae> (accessed on April 16, 2004).

"Jacanas." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/jacanidae.html> (accessed on April 16, 2004).

family CHAPTER

PAINTED SNIPES

Rostratulidae

Class: Aves

Order: Charadriiformes

Family: Rostratulidae

Number of species: 2 species

PHYSICAL CHARACTERISTICS

Painted snipes range in size from 7.4 to 10.9 inches (19 to 28 centimeters) in length and from 2.3 to 7 ounces (65 to 200 grams) in weight. They have strong legs and long toes. Painted snipes have bills that curve downward at the tip and spread slightly to take on a spatula-like shape. The South American painted snipe is black-brown on the back and white on the belly. The head and neck are reddish brown in color with a contrasting cream-colored stripe. Males and females are generally similar in appearance, but females are slightly brighter in color and also slightly larger in size. The other species in the family is the greater painted snipe. In greater painted snipes, females have brown heads and necks, bronze-green wings, and black-barred backs. Males are duller in color, with spotted heads and gray-gold backs. Both male and female greater snipes have a striking pale streak around the eye, as well as a pale stripe on top of the head.

GEOGRAPHIC RANGE

Greater painted snipes are found in Africa, south Asia, Southeast Asia, the Philippines, Indonesia, and Australia. The South American painted snipe is found only in South America.

HABITAT

Painted snipes occur primarily in wetland habitats such as marshes. They can also be found in moist grasslands and along streams and rivers with vegetation along the banks. Some populations inhabit human-made environments, including rice

phylum

class

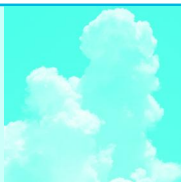
subclass

order

monotypic order

suborder

▲ family



A THIRD PAINTED SNIPE?

Some ornithologists believe that the greater painted snipe of Australia is a distinct species, a third painted snipe. It has longer wings, a shorter bill, and shorter legs than greater painted snipes found elsewhere in the world. Coloration in Australian populations is also different, since the males' gray tail is paler and females have a chocolate-brown rather than reddish brown head, as well as round tail spots. Finally, the calls of Australian painted snipes sound different from the low booming call of other greater painted snipes.

fields. Both painted snipe species regularly move short distances to find appropriate wet habitats.

DIET

Painted snipes are omnivorous, taking in both plant and animal matter. Animals they eat include invertebrates, animals without a backbone, such as insects, snails, earthworms, and crustaceans. Plant matter includes items such as grass seeds and cultivated grains. Painted snipes forage, or search for food, by standing in mud or shallow water and sifting through water and soil with their spatula-shaped bills. Greater painted snipes forage primarily at dusk and at night.

BEHAVIOR AND REPRODUCTION

Painted snipes are usually either solitary and living alone, or are found in pairs. In some instances, however, groups of as many as one hundred individuals have been observed,

probably because dry weather reduces the amount of appropriate habitat.

The South American painted snipe is monogamous (muh-NAH-guh-mus), meaning that a single male mates with a single female during the breeding season. Males call to court females. South American painted snipes nest in small colonies, with five or six nests per 2.5 to 3.7 acres (1.0 to 1.5 hectares). The female lays two, or, on rare occasions, three eggs at a time. It is not known how long the eggs take to hatch or whether both parents are involved in taking care of the chicks. It is also not known how soon after hatching chicks leave the nest.

In the greater painted snipe, the more brightly colored females court the males. Courtship involves calling at dusk with what is described as a series of hiccup-like hoots made either from the ground or while in flight. Greater painted snipes are usually polyandrous (pah-lee-AN-drus), with a single female mating with multiple males, often as many as four. Sometimes, however, they are monogamous, with a female mating with only one male. Males are responsible for building the nests, incubating, or sitting on the eggs, and feeding and protecting the young once they hatch.

The female generally lays between two and five eggs at a time. Greater painted snipe chicks are precocial (pree-KOH-shul), hatching at an advanced stage of development, covered with feathers and being able to move. Male greater painted snipe males breed at one year of age, and females breed at age two.

Both painted snipe species build nests that are shallow bowls of reeds and grass. Painted snipes usually choose nest sites that are hidden in dense vegetation, although sometimes they will use more open areas.

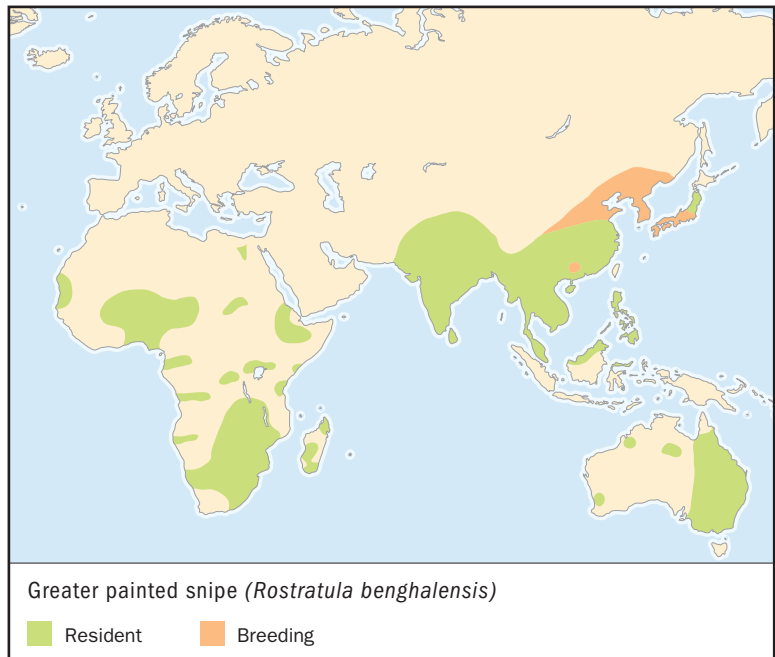
PAINTED SNIPES AND PEOPLE

Both painted snipe species have long been hunted for food and sport. Greater painted snipes fly slowly, however, and are often considered too easy a target.

CONSERVATION STATUS

Neither species of painted snipe is considered threatened at present. However, the Australian form of the greater painted snipe should, in the opinion of some biologists, be considered a separate species. If it were recognized as a separate species, it would most likely be designated either Vulnerable, facing a high risk of extinction, dying out, or Endangered, facing a very high risk of extinction, by the World Conservation Union (IUCN). Australian greater painted snipes have declined due to the loss of wetland and grassland habitats, as well as long periods of drought.

SPECIES ACCOUNT



GREATER PAINTED SNIPE *Rostratula benghalensis*

Physical characteristics: The greater painted snipe measures 9 to 10.9 inches (23 to 28 centimeters) in length and 3.2 to 6.7 ounces (90 to 190 grams) in weight. The female greater painted snipe has a reddish brown head and neck with a bronze-green back and wings. The male has a gray head and back spotted with gold. Both males and females have white eye patches and a white stripe on the top of the head. Young greater painted snipes resemble adult males.

Geographic range: The greater painted snipe is found in Madagascar, sub-Saharan Africa, south Asia, Southeast Asia, Japan, southeast Russia, the Philippines, Indonesia, and Australia. The Australian populations are distinct from other greater painted snipes and may be a separate species.

Habitat: Greater painted snipes occupy wetland habitats. They sometimes inhabit human-made areas such as rice fields.

Diet: Greater painted snipes are omnivorous, eating both plant and animal matter. Their diet includes small invertebrates, including insects, worms, and crustaceans, as well as seeds and grains.

Behavior and reproduction: Greater painted snipes are usually found either alone or in small groups. They forage, or search for food, around dusk as well as at night.

Greater painted snipes are either polyandrous, with each female mating with multiple males, or monogamous, with each female mating with only one male. The greater painted snipe may breed at any time during the year, but most frequently breeds after rainfalls. Females usually lay four eggs at a time in a shallow grass bowl-shaped nest. Nests are usually hidden in moist vegetation. Males are responsible for incubating, or sitting on, the eggs. Chicks hatch after fifteen to twenty-one days. Greater painted snipe chicks are precocial, and are usually able to leave the nest fairly quickly after hatching. Chicks are cared for exclusively by the male.

Greater painted snipes and people: Greater painted snipes have long been hunted for sport.

Conservation status: The greater painted snipe is not considered threatened at the present time. However, some populations have

declined due to the large-scale loss of wetland habitats. The Australian greater painted snipes may represent a distinct species, and if so, would likely be considered either Vulnerable or Endangered. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Painted Snipes." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/rostratulidae.html> (accessed on April 20, 2004).

"Rostratulidae (Painted-Snipes)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=53> (accessed on April 20, 2004).

family CHAPTER

CRAB PLOVER

Dromadidae

Class: Aves

Order: Charadriiformes

Family: Dromadidae

One species: Crab plover (*Dromas ardeola*)

PHYSICAL CHARACTERISTICS

Crab plovers range in size from 13 to 16 inches (33 to 41 centimeters) in height and 8 to 11.2 ounces (230 to 325 grams) in weight. They are mostly white in color, but have a black patch on the back and some black on the wings. The wings of crab plovers are long and pointed, and the wingspan, or the distance from wingtip to wingtip when the wings are open, ranges from 29 to 30.7 inches (74 to 78 centimeters). The tail is short and gray and the legs are long and blue-gray in color. Crab plovers have webbed feet and a strong first toe, which is used for digging nest burrows. Crab plovers have bills that are designed for eating crabs. These are large, heavy, black in color, and shaped like daggers. Male and female crab plovers are generally similar in size and appearance, but males have larger, heavier bills. Young crab plovers differ slightly in coloration from adults, with gray on top of the neck, behind the neck, and on the wings.

GEOGRAPHIC RANGE

Crab plovers are found in coastal habitats along the Indian Ocean. Populations are found in portions of Africa, Madagascar, the Middle East, and India.

HABITAT

Crab plovers occupy desert and semi-desert habitats, generally within 0.6 miles (1 kilometer) of the ocean. They require sand dunes for nesting.

phylum

class

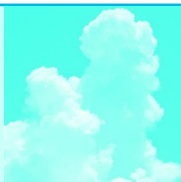
subclass

order

monotypic order

suborder

▲ family



NEST BURROWERS

Crab plovers are the only species in the order Charadriiformes (gulls, terns, plovers, and other shorebirds) that nest in underground burrows. Their burrows help provide a cool environment for adults, eggs, and chicks. Breeding in crab plovers generally occurs during the hottest months of the year, when outside temperatures can reach 104°F (40°C). Burrows also help protect young from potential predators.

DIET

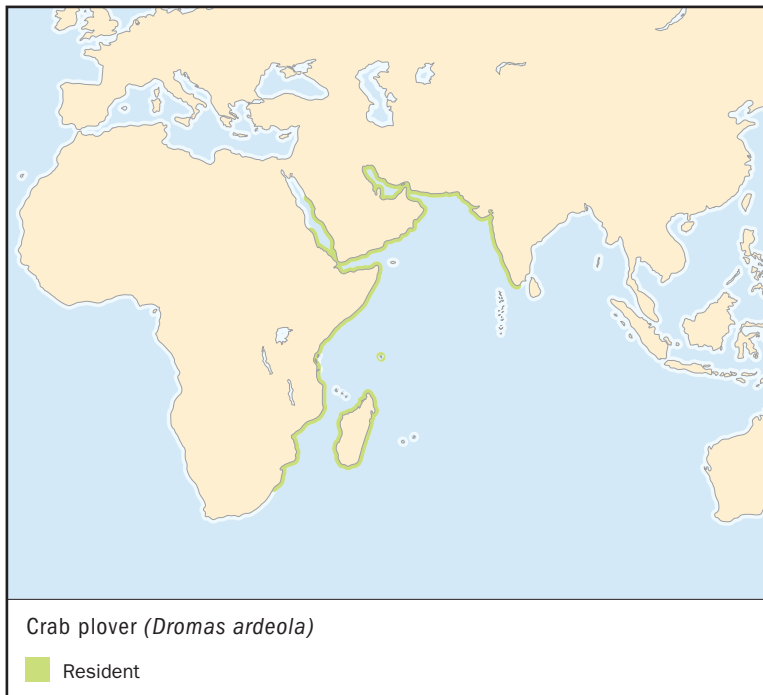
Crab plovers are specialized feeders, that is, their diet includes only a few items. Crab plovers eat crabs almost exclusively. They hunt their prey by running after them in mudflats or shallow water and then stabbing them with their sharp, powerful bills. Small crabs are generally swallowed whole, while larger crabs are torn to pieces and then eaten. Both adult and young crab plovers eat crabs. Adults give young chicks bits of prey, and older chicks entire prey items. Other foods that crab plovers eat occasionally include other crustaceans, small fish, marine worms, and other invertebrates.

BEHAVIOR AND REPRODUCTION

Crab plovers are found in large groups throughout the year. They gather in large flocks of as many as hundreds of individuals to forage, or hunt for food. Crab plovers also breed in large colonies, digging their nest burrows close together in sand dunes. Roost sites, where birds rest, can include as many as a thousand crab plovers. The calls from these sites, described as a barking “crow-ow-ow” are sometimes heard as far as a mile (1.6 kilometers) away.

Some populations of crab plovers migrate during the year, traveling from one living area to another and back. Other populations remain in the same place throughout the year. All crab plovers are most active at dawn and dusk as well as at night, because their habitats tend to be extremely hot during the day.

Unlike many other birds, crab plovers nest during the hottest, driest times of year, generally between the months of April and June. Crab plovers time their reproduction so that there will be plenty of crabs available as prey when the chicks hatch. Because of the extreme heat, however, crab plovers build their nests underground, using their bills and feet to dig large burrows in sand dunes. Burrows measure approximately 47.2 to 74 inches (120 to 188 centimeters) long. Crab plovers are the only species in the order Charadriiformes (which includes gulls, terns, plovers, and other shorebirds) to nest in burrows. Burrows not only provide a cool environment for adults, eggs, and chicks, but help provide protection from potential predators.



Crab plovers are believed to be monogamous, with a single male breeding with a single female during the breeding season. However, as many as ten adult birds are sometimes seen at a single nest burrow, suggesting that some individuals may nest together, or that adult siblings may help their parents raise younger siblings. Females lay only one egg at a time. The crab plover egg is extremely large compared to the bird's body size. It is not known how long eggs take to hatch. It is also not known for certain whether both parents help raise chicks, but it is likely that only females are responsible for this task. Although crab plover young are precocial (pree-KOH-shul), hatching at an advanced stage of development, feathered and able to move, they remain in the burrow for a considerable length of time, being fed by adults.

CRAB PLOVERS AND PEOPLE

Crab plovers have little contact with humans because of the harsh climates they live in. However, in the past both crab plovers and their eggs have been eaten by humans.

CONSERVATION STATUS

Crab plovers are not considered threatened at this time, with surveys suggesting that there are as many as 50,000 individuals in existence. However, some populations have been affected by oil production activity, habitat destruction, pollution, and other factors.

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Crabplover." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/dromadidae.html> (accessed on April 20, 2004).

"Dromadidae (Crab Plover)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=54> (accessed on April 20, 2004).

family CHAPTER

OYSTERCATCHERS

Haematopodidae

Class: Aves

Order: Charadriiformes

Family: Haematopodidae

Number of species: 7 species

PHYSICAL CHARACTERISTICS

Oystercatchers vary in length from 15.8 to 19.8 inches (40 to 49 centimeters) and in weight from 0.9 to 1.5 pounds (400 to 700 grams). Some oystercatcher species have dark feathers throughout the body while others are dark with white feathers on the lower breast, belly, and parts of the wings and tail. All-dark oystercatcher species tend to be somewhat larger than black-and-white oystercatchers. One species, the variable oystercatcher, has individuals with both coloration patterns as well as individuals that are somewhere between the two. Oystercatchers have bright red or orange bills with a blade-like or dagger-like shape. The eye and a narrow ring around the eye are red in Old World oystercatcher species. In New World species, the eyes are yellow while the eye rings are either yellow or orange-red. The legs are pink and the feet are stout, with toes that are partially webbed. Oystercatchers have short necks, long, pointed wings, and short tails. Females are larger than males in oystercatchers, and also have longer wings and bills.

GEOGRAPHIC RANGE

Oystercatchers are found in coastal habitats worldwide, including North America, Europe, Africa, east Asia, Australia, and New Zealand. They also inhabit lakeshore areas in New Zealand, temperate (mild) Europe and Asia, and northern Africa.

HABITAT

Oystercatchers occupy diverse types of shoreline habitat. These include beaches of rock, sand, pebble, and shell. Some

phylum

class

subclass

order

monotypic order

suborder

▲ family



HELPING CHICKS SURVIVE

Oystercatchers have a difficult time successfully raising young. Many eggs are washed away by storms before they even hatch, and chicks, when they do hatch, are often taken by predators. Because of the danger of predators, oystercatcher chicks become fully mobile within a day of hatching, and are able to run and hide from danger. Parents also feed chicks for a long period of time, helping them grow quickly in order to better escape predators.

species can be found in marshes or coastal lagoons. A small number of species live on agricultural land or pastures.

DIET

Oystercatchers eat many different types of marine invertebrates, including mollusks, crabs, chitons (KYE-tunz; a type of mollusk), sea urchins, and snails. They also occasionally eat fish. Inland oystercatcher populations focus on arthropods such as insects and spiders. Oystercatchers use their sensitive bills to search for food in shallow water or soft mud. They are effective hunters that are able to defeat their prey using a variety of techniques. With mollusks, oystercatchers sometimes stab their narrow bills into a slightly open shell. They may also pound mollusks against sharp rocks to crack them open.

BEHAVIOR AND REPRODUCTION

Most species of oystercatchers are migratory, moving from breeding areas during the breeding season to nonbreeding grounds in the winter. Many individuals return to the same locations from one year to the next. All species defend territories from other members of the species during the breeding season, and some defend territories year-round. In oystercatchers that are not territorial during the winter, such as the African black oystercatcher, individuals gather in large numbers for better protection against predators, animals that hunt them for food. This behavior also helps individuals stay warm in cold climates. Oystercatchers sometimes also gather in flocks to forage, or search for food. Foraging flocks in coastal species tend to have no more than fifty individuals, but in inland oystercatchers, groups of as many as a thousand individuals are sometimes observed. The oystercatcher call is commonly described as a trill followed by a loud peep.

Oystercatchers breed during the summer in most parts of the world. All species are monogamous (muh-NAH-guh-mus), that is, a single male breeds with a single female during the breeding season. In many cases, individuals also keep the same mate from year to year. Courtship in oystercatchers is sometimes called “piping” because it involves a male and female singing a single

“piped” note together while walking, running, or flying next to each other, making frequent synchronized turns. Nearby pairs often perform the piping routine at the same time. The piping routine is also used to alert other members of the species to the boundaries of a pair’s territory.

Females lay between one and four eggs at a time, usually two or three. Nests are simple hollows on the ground, either unlined or lined. Both parents help incubate, or sit on, the eggs. Eggs hatch after between twenty-four and thirty-nine days. Chicks are colored gray-brown to blend into their environments. They are able to leave the nest within a day of hatching. However, parents continue to feed the chicks for at least sixty days after hatching. Most oystercatcher pairs are only able to raise one offspring successfully during each breeding season. Storms can wash away eggs, and chicks are frequently lost to predators.

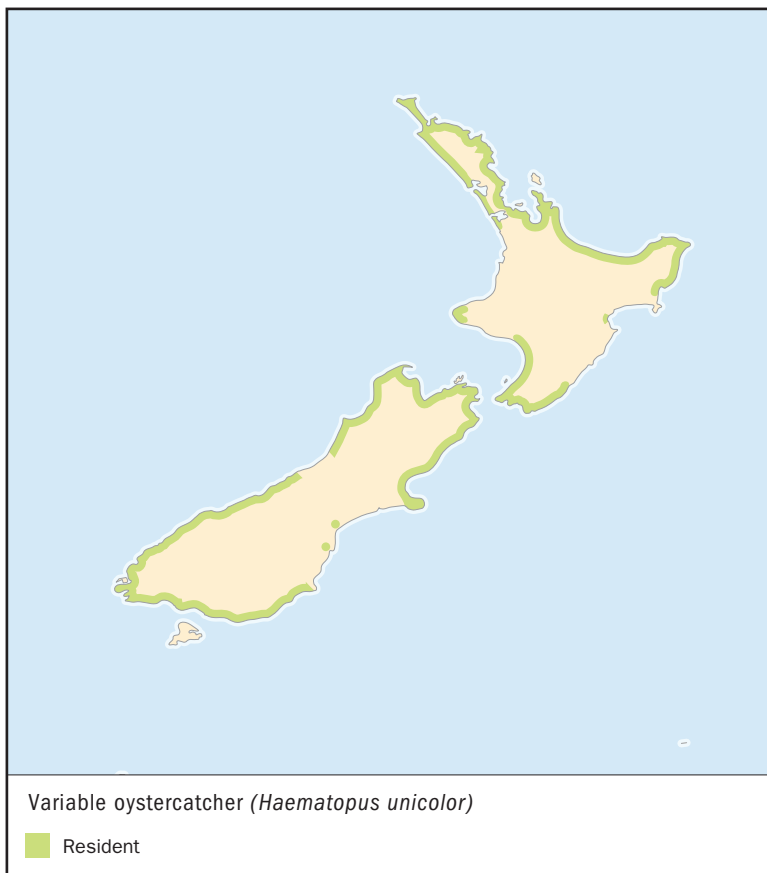
OYSTERCATCHERS AND PEOPLE

It is sometimes claimed that oystercatchers help deplete oyster beds used by humans, but there is no evidence to back up these claims.

CONSERVATION STATUS

Of the seven species of oystercatchers in existence, one is considered Endangered, facing a very high risk of extinction, and one is considered Near Threatened, in danger of becoming threatened. Chatham Island oystercatchers are Endangered. There are only 100 to 150 individuals left in their natural habitat on four small islands in New Zealand. Chatham Island oystercatcher populations did increase in number during the 1990s as a result of predator removal from critical habitat areas and artificial incubation of eggs. African black oystercatchers are considered Near Threatened. Populations number about 4,800 total. African black oystercatchers have been affected primarily by human disturbance, particularly off-road vehicles and other coastal human recreation.

SPECIES ACCOUNT



VARIABLE OYSTERCATCHER *Haematopus unicolor*

Physical characteristics: The variable oystercatcher is about 18.5 to 19.3 inches (47 to 49 centimeters) in length. Males weigh about 1.5 pounds (678 grams) while females are a little heavier at 1.6 pounds (724 grams). The variable oystercatcher is the only species that includes all black individuals as well as black-and-white colored individuals. Some individuals have a coloration that is intermediate between the two primary types. They are known as “smudgies.” The eye, eye ring, and bill are all red in this species.

Geographic range: The variable oystercatcher is found exclusively on the coasts and islands of New Zealand.

Habitat: Variable oystercatchers occupy rocky and sandy seashore areas.

Diet: Variable oystercatchers eat primarily marine invertebrates such as bivalves, crabs, snails, and polychaetes (PAHL-ee-keets; marine worms).

Behavior and reproduction: Variable oystercatchers are territorial, but occasionally form flocks. There is frequent breeding between differently colored variable oystercatchers. The breeding season occurs in December and January. Nests are built on beaches and sand dunes. Females typically lay three eggs which hatch after twenty-five to thirty-two days.

Variable oystercatchers and people: No significant interactions between variable oystercatchers and people are known.

Conservation status: Variable oystercatchers are not officially considered threatened at this time. However, the total population is

only about 3,900 individuals. Variable oystercatchers have been affected by human disturbance and predation by introduced mammals. ■

FOR MORE INFORMATION

Books:

BirdLife International. *Threatened Birds of the World*. Barcelona: Lynx Edicions, 2000.

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Haematopodidae (Oystercatchers)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Haematopodidae.html#Haematopodidae> (accessed on April 22, 2004).

"Haematopodidae (Oystercatchers)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=55> (accessed on April 22, 2004).

"Oystercatchers." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/haematopodidae.html> (accessed on April 22, 2004).

family CHAPTER

STILTS AND AVOCETS

Recurvirostridae

Class: Aves

Order: Charadriiformes

Family: Recurvirostridae

Number of species: 8 species

PHYSICAL CHARACTERISTICS

Stilts and avocets range from 14 to 20 inches (35 to 51 centimeters) in height and from 5.8 to 16.2 ounces (166 to 461 grams) in weight. All species have striking bill shapes. In avocets, the bills curve upward, particularly in females. The ibisbill has a bill that curves downward. In stilts, the bills are generally straight or slightly curved. Stilts and avocets have the longest legs (in proportion to body size) of any shorebirds. These may be red, blue, or gray in color. Most stilts and avocets are black and white in color, sometimes with reddish-brown areas.

GEOGRAPHIC RANGE

Stilts and avocets are found worldwide, on all continents except Antarctica. The largest number of species occupy areas near Australia.

HABITAT

Most stilts and avocets occupy large wetland areas. The ibisbill, however, prefers rocky habitats along slow-moving streams. Avocets, as well as the banded stilt, generally live in saltwater wetlands. Other stilt species use both saltwater and freshwater wetlands. The Andean stilt occurs only close to high altitude saline lakes. Many stilt and avocet species also use man-made areas as habitat, including dams, irrigation sites, and sewer ponds.

DIET

Stilts and avocets eat aquatic invertebrates such as crustaceans, insect larvae, worms, and mollusks. They also eat small

phylum

class

subclass

order

monotypic order

suborder

▲ family



CROSS-BREEDING IN AN ENDANGERED STILT

The black stilt, which is found exclusively in New Zealand, is endangered for a variety of reasons. Wetland habitats have been destroyed by humans, and mammals not originally found on New Zealand eat black stilt eggs. Black stilts also cross-breed, that is, mate with individuals of other species. In the case of black stilts, cross-breeding occurs with black-winged stilts, which are also found on New Zealand. There are now fewer than one hundred black stilts left in existence.

fish and, sometimes, plant material. Stilts and avocets generally obtain food by pecking at items. In addition, some avocets swing their bills through water or soft mud and filter out small food items. Some stilts and avocets also stick their entire heads underwater to look for food. The ibisbill uses its bill to rake through pebbles in the rocky stream habitats it prefers. It then snatches whatever small aquatic animals it disturbs. Finally, some stilts and avocets have been known to snap at flying insects.

BEHAVIOR AND REPRODUCTION

A few species of stilts and avocets, such as black-winged stilts, pied avocets, and American avocets, migrate from breeding grounds to wintering grounds over the course of the year. Ibisbills migrate altitudinally, moving from higher to lower elevations and back. In addition, most species move short distances to find suitable wetland areas.

Most species of stilts and avocets form large flocks while feeding. Flocks can include several thousand individuals. In most cases, feeding occurs during the daytime. However, some stilts also feed at night. Stilts and avocets generally roost, or spend the night, standing in water. They may also rest during the day, either sitting on the ground or standing on one foot with the head tucked under the wing. Unlike other members of the group, ibisbills are usually found alone, in pairs, or in much smaller groups that rarely exceed seven or eight individuals.

Except for the ibisbill, stilt and avocet species also nest in large colonies, groups, which may include multiple shorebird species. Breeding colonies tend to be very noisy. Stilts and avocets use a variety of calls to communicate with mates or offspring, or to signal danger.

Most stilts and avocets are monogamous (muh-NAH-guh-mus), with a single male breeding with a single female at one time. Birds may change mates over the course of a breeding season, however. To attract females, males perform a display that involves dipping their heads, shaking, and then preening, or smoothing their feathers. After mating, the male and female

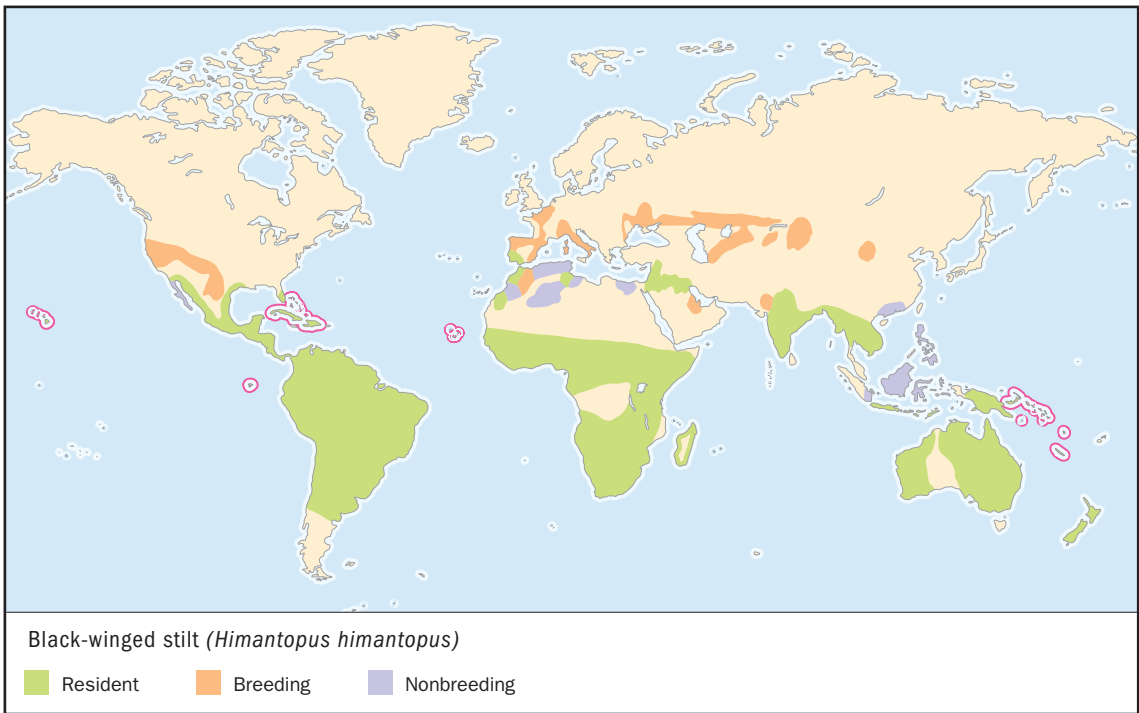
cross bills and walk together, the male holding one wing over the back of the female. Generally, the female lays three or four eggs at a time. Both the male and the female participate in incubating, or sitting on the eggs, and feeding and protecting the chicks once they hatch. Adults dive-bomb potential predators and may also fake a broken wing in order to distract intruders and draw them away from the nest.

STILTS, AVOCETS, AND PEOPLE

There are no significant interactions between most species of stilts and avocets and people. However, humans have appreciated these birds for a long time and are generally enthusiastic about conservation measures to help protect populations.

CONSERVATION STATUS

The black stilt, which is restricted to New Zealand, is considered Critically Endangered, facing an extremely high risk of extinction. It has suffered primarily from habitat destruction and non-native predators introduced by humans, which eat large numbers of black stilt eggs. There are currently fewer than 100 black stilts in existence. The Hawaiian subspecies of the black-winged stilt is also considered Endangered, facing a very high risk of extinction. There are approximately 1,800 individuals left in the wild. Populations have declined due to habitat destruction and predators introduced by humans.



SPECIES ACCOUNTS

BLACK-WINGED STILT *Himantopus himantopus*

Physical characteristics: The black-winged stilt has long pink legs and a straight or upwardly curved black bill. In the male, the back and wings are black, the belly is white, and the tail is marked with gray bands. Females have dullish brown backs. The color of the head and neck varies in black-winged stilts from white to black.

Geographic range: The black-winged stilt is widely distributed and occurs on all continents except Antarctica.

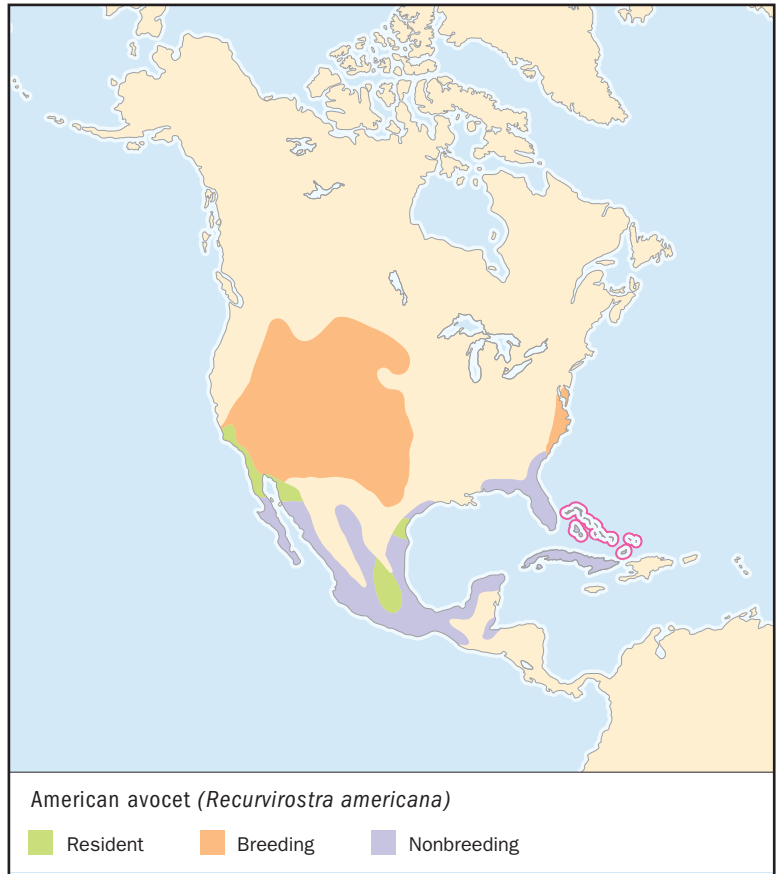
Habitat: Black-winged stilts occupy wetland habitats including marshes, swamps, lakeshores, river-edges, and flooded fields.

Diet: Black-winged stilts eat aquatic insects, mollusks, crustaceans, worms, small fish, and tadpoles. They sometimes forage, or search for food, at night, particularly when there is no moon and therefore little light.

Behavior and reproduction: Black-winged stilts can be found in large flocks of as many as several thousand individuals. They have a display where they leap up and then float down, but it is not known what the purpose of the display is. Their call is described as a sharp “yep” sound.

Black-winged stilts and people: No significant interactions between black-winged stilts and people are known.

Conservation status: The black-winged stilt is not considered threatened globally, but the Hawaiian subspecies is considered Endangered. There are about 1,800 individuals left in the wild. ■



AMERICAN AVOCET

Recurvirostra americana

Physical characteristics: American avocets have blue legs and upwardly curved black bills. The wings and the back are black. The head, neck, and breast are gray during the nonbreeding season but change to orange during the breeding season. Males and females are similar in color but males are often larger. Females have shorter bills with a more pronounced upward curve.

Geographic range: American avocets occupy the western United States, Baja California and much of Mexico, Florida, the eastern coast of the United States, and the Bahamas to Cuba.

Habitat: American avocets use temporary wetland areas, such as areas that flood for part of the year, in the western United States, as well as more permanent wetland habitats.

Diet: American avocets eat aquatic insects, crustaceans, worms, and small fish. They also eat seeds. American avocets often forage, or look for food, in large flocks. They swing their bills through the water to find food, but are also known to peck at food or plunge underwater for it.

Behavior and reproduction: American avocets are found in large flocks during the nonbreeding season. During the breeding season, male-female breeding pairs form and defend territories from other individuals. American avocets threaten an intruder by facing the other bird and extending their necks. Females generally lay four eggs at a time in a grass-lined nest on the ground. Eggs hatch after twenty-two to twenty-nine days. Both the male and female help incubate, or sit on, the eggs, and both feed the chicks once they hatch. Chicks leave the nest after four or five weeks.

American avocets and people: The American avocet was hunted in its habitats in California during the early 1900s, but this practice has stopped.

Conservation status: The American avocet is not considered threatened at this time. However, pollution and destruction of wetland habitats have led to population declines in many parts of its range. ■

FOR MORE INFORMATION

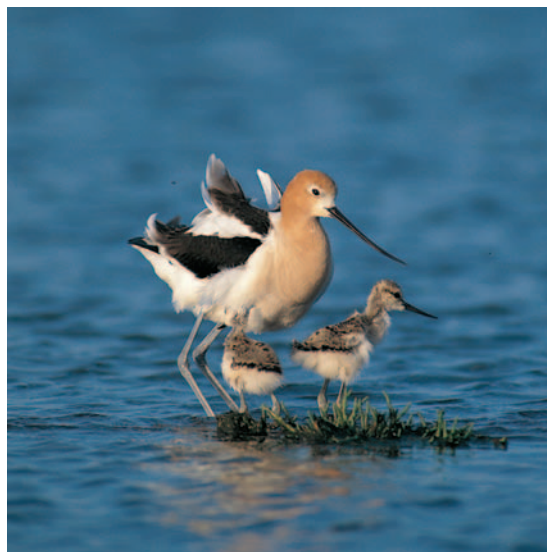
Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Avocets, Stilts." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/recurvirostridae.html> (accessed on May 1, 2004).



Both the male and female American avocet help incubate the eggs, and both feed the chicks once they hatch. Chicks leave the nest after four or five weeks. (© David Weintraub/Photo Researchers, Inc. Reproduced by permission.)

“Family Recurvirostridae (Avocets and Stilts).” Animal Diversity Web.
<http://animaldiversity.ummz.umich.edu/site/accounts/classification/Recurvirostridae.html#Recurvirostridae> (accessed on May 1, 2004).

“Recurvirostridae (Stilts and Avocets).” The Internet Bird Collection.
<http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=57> (accessed on May 1, 2004).

family CHAPTER

THICK-KNEES

Burhinidae

Class: Aves

Order: Charadriiformes

Family: Burhinidae

Number of species: 9 species

PHYSICAL CHARACTERISTICS

Thick-knees vary in size from 12.5 to 23 inches (32 to 59 centimeters) in length and 0.7 to 2.4 pounds (0.3 to 1.1 kilograms) in weight. Their heads are round, their necks are slender, and their bodies are large. Thick-knees have long legs, long tails, and a pointed bill. All thick-knees have large yellow or amber colored eyes and stripes either above the eyes, through the eyes, or below the eyes. Most species are a light sandy brown on top and pale on the belly. The wings are either solid-colored, striped, or spotted while folded. When thick-knees are flying, however, striking black and white patterns on the wings and tail are revealed. Males and females tend to be similar in both size and color. Young thick-knees are colored to blend into their stony or sandy habitats.

GEOGRAPHIC RANGE

Thick-knees are found primarily in the Old World, including portions of Asia, Europe, the Middle East, and Africa. Two species occupy parts of Central America and South America, and several species occur in Australia.

HABITAT

Many species of thick-knees are found in either grassland or brush habitats. Others occupy dry desert areas, usually adjacent to a river or stream. The beach thick-knee is found in seashore areas. One species, the Senegal thick-knee, lives in large cities such as Cairo, Egypt, where it finds appropriate nesting areas on the flat roofs of houses and other buildings.

phylum

class

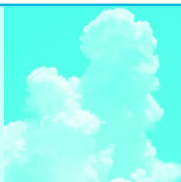
subclass

order

monotypic order

suborder

▲ **family**



NOCTURNAL BIRDS

Many thick-knee species are crepuscular (kri-PUS-kyuh-lur; active at dusk) or nocturnal (active at night). The bold, black-and-white wing and tail markings that characterize thick-knees are easy to see in fading light. Because they are nocturnal, thick-knees also defend their territories using loud calls, rather than the visual postures and displays used by other bird species. Their calls are loud and carry a long distance, and thick-knees have become an important part of the folklore in parts of their range.

Several species of thick-knees are occasionally found in agricultural lands and pastures.

DIET

Thick-knees have a diet that consists primarily of invertebrates, animals without a backbone, such as beetles, crickets, grasshoppers, crustaceans, mollusks, snails, slugs, and worms, as well as larger vertebrate prey, animals with backbones, such as frogs, lizards, and rodents. Some thick-knees will also eat plant material, including seeds and the shoots of plants. The beach thick-knee eats large numbers of crabs. Thick-knees forage, or search for food, by walking slowly while looking for prey on the ground. Food items are picked up using their strong bills. Larger prey are broken into pieces if necessary before swallowing.

BEHAVIOR AND REPRODUCTION

Some thick-knees, such as the stone-curlew, are generally found alone. Other thick-knees are often found in small groups. All thick-knees spend the majority of their time on the ground, usually perching no higher than a few feet off the ground. However, thick-knees are strong fliers and will fly away if disturbed by intruders. Many species of thick-knees are nocturnal, quiet by day and active at night, when they call loudly.

Breeding in thick-knees occurs in the spring, except in the tropics, when it may occur year-round. The stone-curlew is a monogamous (muh-NAH-guh-mus) species, with a single male mating with a single female. Stone-curlews keep the same mate throughout life. Many other thick-knee species are also monogamous, but the breeding system for a few species remains uncertain. Thick-knee nests are simple and formed by scraping the ground. The male and female select the site together by bowing towards a particular spot. The male chooses the final spot, and the female scrapes at the ground with her feet to clear a nest. Twigs, small stones, and leaves may be scattered around the nest site. Often, several nests are built this way by the pair before one is finally chosen.

In most thick-knee species, the female lays two or three eggs at a time. In the beach thick-knee, only one egg is laid. The eggs are usually light brown in color and either spotted or streaked to make them less visible on the ground. Both male and female incubate, or sit on, the eggs. Eggs hatch after twenty-four to twenty-seven days. The parents immediately move the eggshells away so that potential predators will have a harder time locating the chicks. Thick-knee chicks are able to leave the nest before they are a day old. However, parents continue to protect and to help feed the young. Adults scare off potential predators by fanning their wings and tail. Thick-knee young become mature and capable of breeding after two or three years.

THICK-KNEES AND PEOPLE

Thick-knees appear in Australian folklore, where they have been given names that sound like their calls, such as “weeloo” or “willaroo.” One species, the double-striped thick-knee, has been kept in farms and other human settlements to reduce the number of insects.

CONSERVATION STATUS

In Europe, stone-curlew populations have declined due to habitat destruction for agricultural development. Peruvian thick-knees are also declining in their habitats due to human disturbance. Bush thick-knees in Australia have declined due to habitat loss as well as hunting, egg collection, and predation, hunting, by foxes.

SPECIES ACCOUNT

BEACH THICK-KNEE *Esacus magnirostris*

Physical characteristics: The beach thick-knee is the largest species of thick-knee and ranges from 21 to 22.5 inches (53 to 57 centimeters) in length. It has thick yellow legs, a long, strong, bill, and yellow eyes. The beach thick-knee is gray-brown on the back and pale on the belly. The shoulder is black above a thin white line. The head is mostly black, with a white stripe through the eye. The bill is black except for a yellow base. There is a rust-colored patch under the tail.

Geographic range: The beach thick-knee is found in the Andaman Islands, the Philippines, Indonesia, New Guinea, other Southwest Pacific islands, and the northern coast of Australia.

Habitat: The beach thick-knee is found on seashore beach habitats. These include sand, shingle, rock, and mud beaches.

Diet: The beach thick-knee eats crabs primarily, but also eats other crustaceans. Large crabs are torn into small pieces before they are swallowed. It generally follows its prey quietly, and then suddenly lunges and grabs. Sometimes, beach thick-knees also search in mud and sand for prey.

Behavior and reproduction: Beach thick-knees fly away when disturbed, usually over the water. Beach thick-knees are monogamous. The nest is usually a shallow depression that is sometimes surrounded by a ring of leaves. The female lays only one egg at a time. The egg hatches after thirty days. The chick is able to fly after twelve weeks, but may stay with its parents for as long as a year.

Beach thick-knees and people: No significant interactions between beach thick-knees and people are known.

Conservation status: The beach thick-knee is not currently considered threatened. However, habitat loss and disturbance may be a problem as beaches become more regularly used for human recreation. ■



The beach thick-knee lives on seashore beach habitats. It eats mostly crabs, but also eats other crustaceans. (© V. Sinha/VIREO. Reproduced by permission.)

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Burhinidae (Thick-knees)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=58> (accessed on May 3, 2004).

"Family Burhinidae (Thick-knees)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Burhinidae.html#Burhinidae> (accessed on May 3, 2004).

"Thick-knees, Stone-curlews." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/burhinidae.html> (accessed on May 3, 2004).

PRATINCOLES AND COURSERS

Glareolidae

Class: Aves

Order: Charadriiformes

Family: Glareolidae

Number of species: 16 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Pratincoles (PRAT-un-kohlz) and coursers vary in size from 6.7 to 11.4 inches (17 to 29 centimeters) in length and 1.3 to 6.1 ounces (37 to 172 grams) in weight. Pratincoles generally have slender bodies, long wings, and short legs. They also have beaks that open wide, which helps them catch insects while flying. One pratincole, the Australian pratincole, has very long legs, however. The coursers, on the other hand, tend to have stockier bodies, shorter wings, and very long legs. Coursers are also characterized by a square tail.

GEOGRAPHIC RANGE

Pratincoles and coursers are found in portions of Africa, Europe, Asia, and Australia.

HABITAT

Most pratincoles live near water, with many species preferring areas along large rivers. Pratincoles of Europe and Asia generally occur in grassland or desert habitats near water. The Egyptian plover occupies sandbars along tropical African rivers. Coursers occupy dry habitats of various types, including extreme desert.

DIET

All pratincoles and coursers eat primarily insects. Coursers will sometimes also eat other invertebrates, animals without a backbone, such as mollusks, as well as seeds. Pratincoles catch their insect prey “on the wing,” that is, in the air while flying. Sometimes they search for insects on the ground as well.

Coursers, on the other hand, find food exclusively on the ground, pecking at food items with their bills. Some coursers have bills that curve downward, and use these bills to dig through soft sand or mud for insects and seeds.

BEHAVIOR AND REPRODUCTION

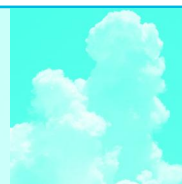
During the nonbreeding season, pratincoles can be found in flocks of as many as 100 individuals. They prefer to rest either on the ground or on rocks in the middle of rivers. All the members of the flock face the same direction, into the wind. Pratincoles have loud, sharp calls which they use most often during migrations or when they are disturbed at their breeding sites.

Coursers are fast runners that generally prefer to run rather than fly from danger. However, they are good fliers as well. Unlike pratincoles, coursers are generally found alone, although small flocks of no more than five to ten individuals are sometimes seen. Many coursers, particularly those in dry, desert environments, move around a great deal as suitable habitat shifts. Coursers are often diurnal, that is, active during the day, but may switch to being nocturnal, active at night, in hot weather.

Pratincoles and coursers either build nests by scraping a shallow indentation on the ground, or use no nest at all. A few species bury their eggs partially in sand. Pratincoles sometimes nest in large colonies, while coursers are solitary nesters, with each pair isolated from other pairs. Pratincoles in the Northern Hemisphere lay two to four eggs at a time. Other species lay no more than two. One species, the double-banded courser, lays only one egg at a time. Eggs are generally either white or cream-colored and marked with spots of streaks to help them blend into their environments.

PRATINCOLES, COURSERS, AND PEOPLE

Pratincoles and coursers are hunted for food in parts of Africa and Southeast Asia. Collared pratincole eggs were collected for food in Hungary until that population was wiped out.

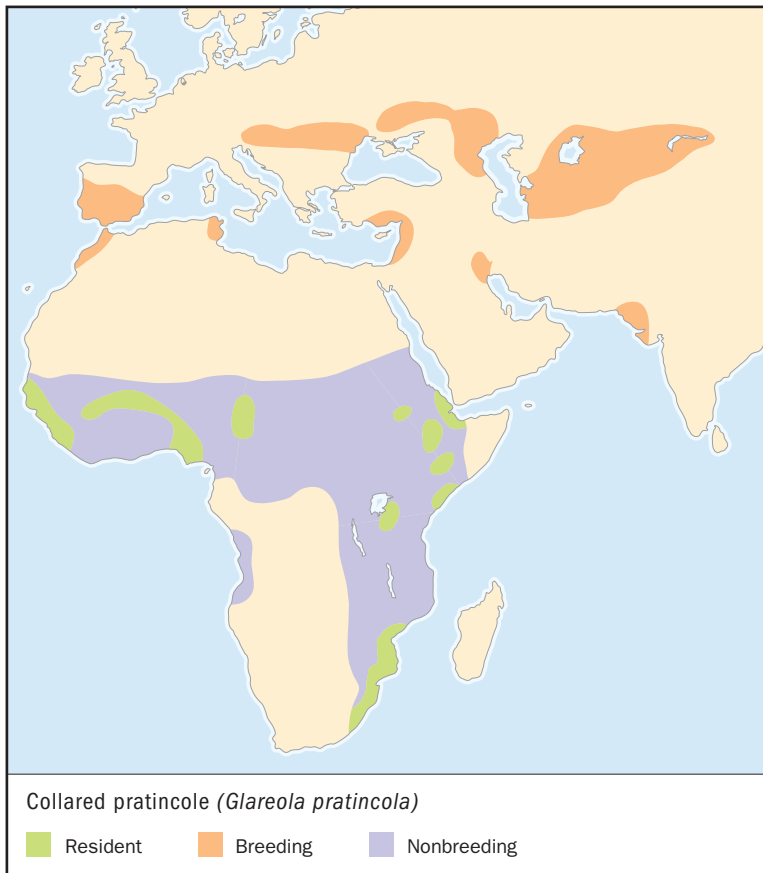


CATCHING INSECTS IN THE AIR AND ON THE GROUND

Pratincoles, which generally catch insects in the air, have long wings that help them maneuver (mah-NOO-ver) during flight. Coursers, which generally catch their insects on the ground, have long legs to help them run at prey. The one species in the pratincole and courier group that hunts insects both in the air and on the ground is the Australian pratincole. The Australian pratincole has long wings as well as long legs.

CONSERVATION STATUS

Of the sixteen species of pratincoles and coursers, one, the Jerdon's courser, is considered Endangered, facing a very high risk of extinction. Populations have declined in their habitats in east-central India due to habitat destruction and disturbance by humans.



COLLARED PRATINCOLE

Glareola pratincola

SPECIES ACCOUNTS

Physical characteristics: The collared pratincole is 8.7 to 9.8 inches (22 to 25 centimeters) in length and weighs between 2.1 and 3.7 ounces (60 to 104 grams). It is a smoky gray-brown color on the back and pale on the belly. During the breeding season, there is a yellow patch on the throat surrounded by a thin black collar. The bill is red at the base and black elsewhere. Collared pratincoles have slender bodies, short legs, and long wings.

Geographic range: The collared pratincole is found in most of sub-Saharan Africa, with isolated breeding populations scattered in portions of Europe and Asia.

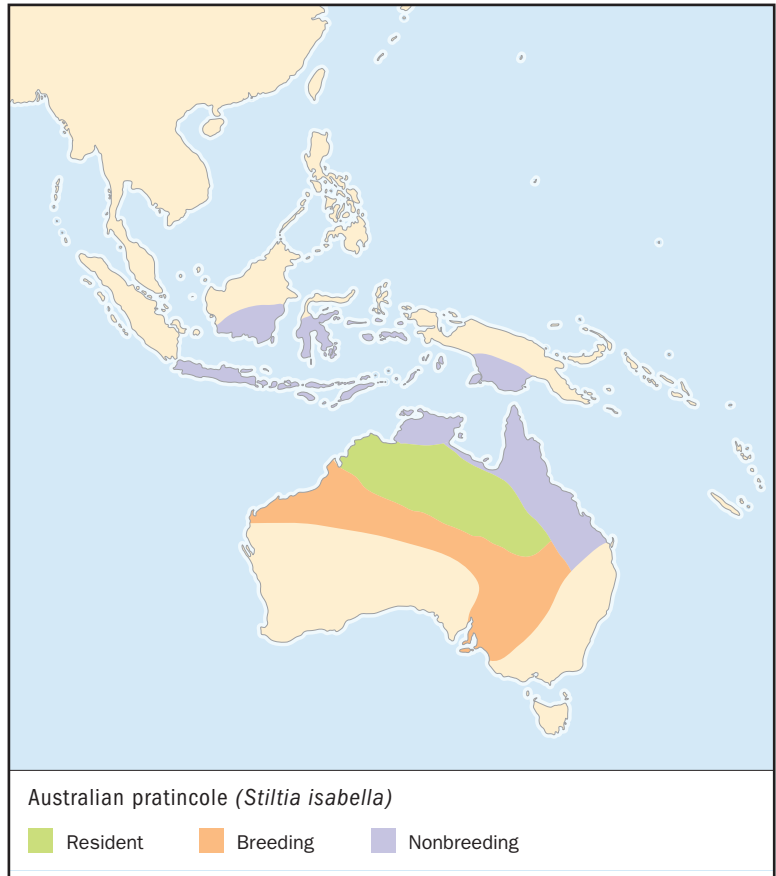
Habitat: The collared pratincole occupies habitats between short-grass grasslands and deserts. It is also found in seashore areas with semi-desert conditions.

Diet: Collared pratincoles eat primarily insects, which they catch in flight or grab from the ground. Grasshoppers and beetles make up the bulk of their diet.

Behavior and reproduction: Collared pratincoles are found in large flocks during both the breeding and nonbreeding seasons. They tend to spend time feeding in the air, and then rest on the ground for periods of time. They scrape a shallow indentation in the ground for a nest, sometimes lining it with pieces of vegetation. Females lay three eggs in the species' European and Asian breeding grounds, but only two in African habitats. Eggs are incubated, or sat upon, by both parents. Eggs hatch after seventeen to nineteen days. Both parents feed the chicks. Chicks are able to fly after about one month.

Collared pratincoles and people: The eggs of collared pratincoles were once collected in large numbers by humans for food. In the past, collared pratincoles also helped control locust plagues by eating large numbers of insects.

Conservation status: The collared pratincole is not considered threatened at this time. However, numbers have declined due to the use of pesticides and artificial fertilizers, as well as habitat destruction and disturbance by humans. ■



AUSTRALIAN PRATINCOLE

Stiltia isabella

Physical characteristics: The Australian pratincole varies between 7.5 and 8.7 inches (19 to 22 centimeters) in length and weighs about 2.3 ounces (65 grams). It is light brown in color across most of its body, but has a dark brown upper belly and white lower belly. The bill has a bright red base and black tip. The Australian pratincole has a slender body, long legs, and extremely long wings.

Geographic range: The Australian pratincole is found in most of inland and northern Australia, as well as portions of New Guinea and eastern Indonesia.

Habitat: The Australian pratincole is found on short-grass plains, usually near water.

Diet: The Australian pratincole primarily eats insects. It catches these either while flying or on the ground. When pursuing prey on the ground, it may use a wing to keep insects from escaping. Australian pratincoles may also eat seeds.

Behavior and reproduction: The Australian pratincole is sometimes found alone, but is more frequently seen in flocks. Individuals are able to run quickly. They are usually silent in breeding colonies, but make considerable noise while migrating.

Australian pratincoles and people: The Australian pratincole is sometimes hunted for food in Indonesia.

Conservation status: The Australian pratincole is fairly common across its range and is not considered threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Hockey, Phil. *Waders of Southern Africa*. Cape Town, South Africa: Struik Winchester, 1995.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Glareolidae (Coursers and Pratincoles)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Glareolidae.html#Glareolidae> (accessed on May 4, 2004).

"Glareolidae (Coursers and Pratincoles)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=59> (accessed on May 4, 2004).

"Pratincoles, Coursers." Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/glareolidae.html> (accessed on May 4, 2004).

PLOVERS AND LAPWINGS

Charadriidae

Class: Aves

Order: Charadriiformes

Family: Charadriidae

Number of species: 66 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Plovers (PLUH-verz or PLOH-verz) and lapwings vary in size from about 5.5 to 16 inches in length (14 to 40 centimeters) and from 1.25 to 10.5 ounces (35 to 298 grams) in weight. Members of the family tend to have chunky bodies, legs that are either short or of medium length, and short bills. Most species are black and white in color with some areas of brown or gray. Some species have bold markings on the face, dark rings around the neck, or black and white wing markings. Lapwing species sometimes have bright wattles, folds of skin that hang from the neck. Lapwings also have spurs on their wings that they use to fight with members of the same species or to defend their nests from intruders.

GEOGRAPHIC RANGE

Plovers and lapwings are found worldwide, on all continents except Antarctica.

HABITAT

Plovers and lapwings occupy a wide range of habitats including seashores, the banks of freshwater lakes and ponds, grasslands, and even flooded tundra areas. Many species occupy human-associated habitats such as agricultural fields, sewage ponds, airports, golf courses, roads, and rooftops.

DIET

Plovers and lapwings eat a diverse diet of aquatic and terrestrial invertebrates, animals without a backbone, small

vertebrates, animals with a backbone, such as fish or lizards, and plant materials such as berries and seeds. Berries are a particularly important part of the diet of tundra species, since there are lengthy periods where few or no insects are available. Most members of this family catch food by running after prey and pecking at it with their bills. Some species use their feet to pat at or scratch the ground to reveal prey. One species, the Magellanic plover, is known for turning over stones to find prey. More aquatic plovers and lapwings, such as the red-kneed dotterel or white-tailed plover, search for food in the water, often sticking their heads underwater to snatch prey. One species, the wrybill, has a special curved bill that it uses to grab mayfly larvae or fish eggs from the bottoms of rocks.

BEHAVIOR AND REPRODUCTION

Some plovers and lapwings remain in the same area throughout the year, while others migrate between breeding habitats and wintering habitats. Most species form flocks during migration and the nonbreeding season. However, one species, Mitchell's plover, is usually found in groups of no more than six individuals. Plovers and lapwings spend a significant amount of time running on the ground, but are good fliers as well. They are active both during the day and at night. Many species are quite noisy.

Most plovers and lapwings build "nests" that are scraped indentations on the ground. One species, however, the shore plover, builds a nest at the end of a tunnel it makes through vegetation. Some species prefer to build their nests in areas that have recently been burned, in part because these areas are usually full of new plant growth, which attracts large numbers of insects. Most plovers and lapwings are monogamous (muh-NAH-guh-mus), with a single male breeding with a single female. However, there are also instances of polygyny (puh-LIH-juh-nee), in which a single male mates with multiple females; polyandry (PAH-lee-an-dree), in which a single female mates with multiple males; and cooperative breeding, in which adults other than the parents (usually the older siblings of the new chicks) help care for chicks. Females generally lay between two and six eggs at a time, with four



PROTECTING CHICKS

Plovers and lapwings have developed a wide variety of techniques to defend their young from potential predators. They will make loud warning calls, perform what are known as distraction displays, and, in some cases, even attack predators. Distraction displays are behaviors designed to distract predators from chicks. Plover and lapwing adults may pretend to have a broken wing to draw predators away from the nest, or may pretend to be incubating eggs at "fake" nest sites to mislead predators.

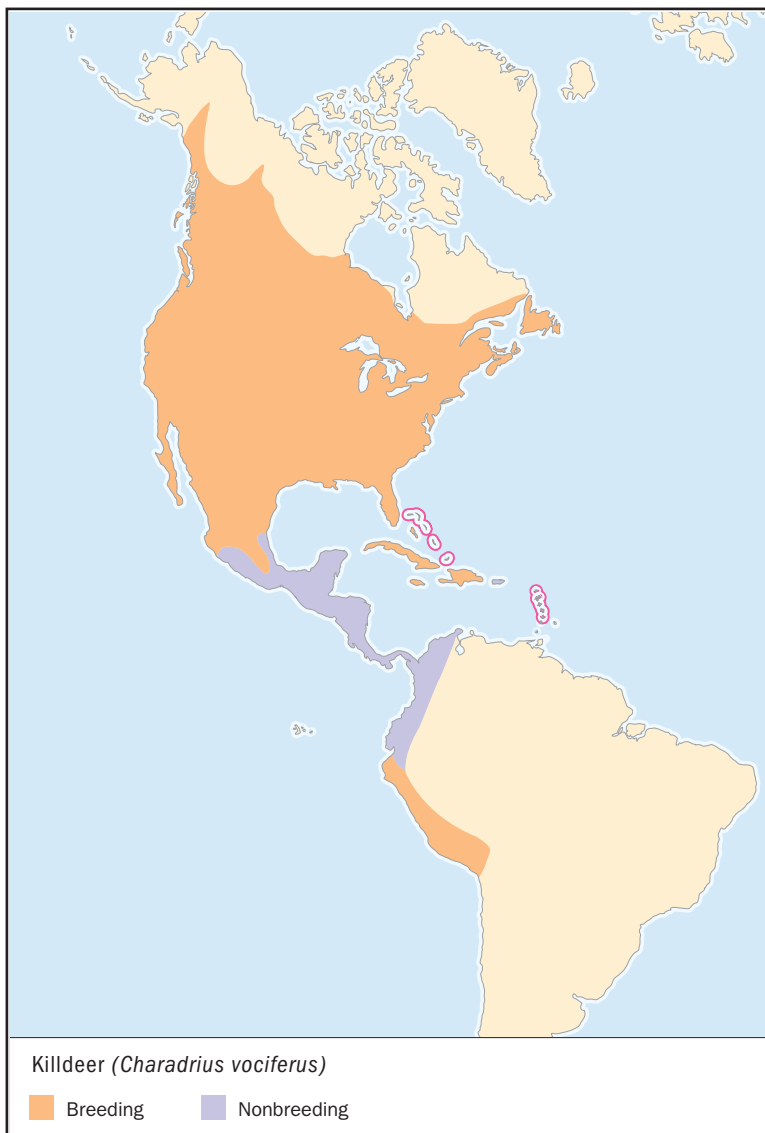
being most common. Eggs hatch after between eighteen and thirty-eight days. The chicks are precocial (pree-KOH-shul), meaning they are covered with down at birth and able to move. Chicks generally leave the nest soon after hatching. In most species, adults do not feed the chicks. The single exception is the Magellanic plover, which is usually able to raise only one chick per breeding season. Magellanic plover adults feed chicks by regurgitating (re-GER-jih-tate-ing; throwing up) food.

PLOVERS, LAPWINGS, AND PEOPLE

Two plover species, the black-bellied plover and golden-plover, were hunted for food in North America during the 1800s. Conservation efforts for the snowy plover and piping plover, which breed on sandy beaches, often conflict with people interested in hunting.

CONSERVATION STATUS

Among the sixty-six species of plovers and lapwings, one is considered Critically Endangered, facing an extremely high risk of extinction; two are Endangered, facing a very high risk of extinction; five are Vulnerable, facing a high risk of extinction; and six are Near Threatened, in danger of becoming threatened. The Javanese lapwing is listed as Critically Endangered and is, in fact, likely extinct—it has not been seen since 1940. The St. Helena plover is Endangered, with only about three hundred individuals remaining. The St. Helena plover declined primarily because of habitat loss, human disturbance, and predation of chicks by cats and the common myna. The shore plover is Endangered due largely to loss of habitat and predation by cats, rats, and the brown skua. There are only about 150 individuals left in the wild. Vulnerable species include the New Zealand dotterel, mountain plover, piping plover, wrybill, and sociable lapwing. Near Threatened species include the Magellanic plover, Madagascar plover, Malaysian plover, Javan plover, hooded plover, and Mitchell's plover.



KILLDEER

Charadrius vociferus

Physical characteristics: The killdeer is 8 to 11 inches in length (20 to 28 centimeters) and about 3.3 ounces (95 grams) in weight. It has two black bands on the breast and a dark line between the eyes.

SPECIES ACCOUNTS

The back is gray-brown in color while the belly is white. The killdeer has long wings and a long tail.

Geographic range: The killdeer is found throughout North America except in Alaska and northern Canada, through Central America, and in parts of northwest South America.

Habitat: The killdeer makes use of a variety of open habitats including mudflats, pastures, agricultural fields, roads, and sometimes even paved parking lots.

Diet: Killdeer eat primarily invertebrates, small vertebrates such as frogs or fish, and seeds and other plant material.

Behavior and reproduction: Killdeer get their name from their call, which sounds like “killdee killdee.” Killdeer are often found in small or medium-sized flocks that may include other species of shorebirds. Some populations are migratory while others remain in the same place year-round. Pairs defend territories from other members of the species during the breeding season, and sometimes during the winter as well. Killdeer are monogamous, with a single male breeding with a single female. Often, individuals keep the same mate from one year to the next. Nests are either scraped on the ground or built on gravel-covered

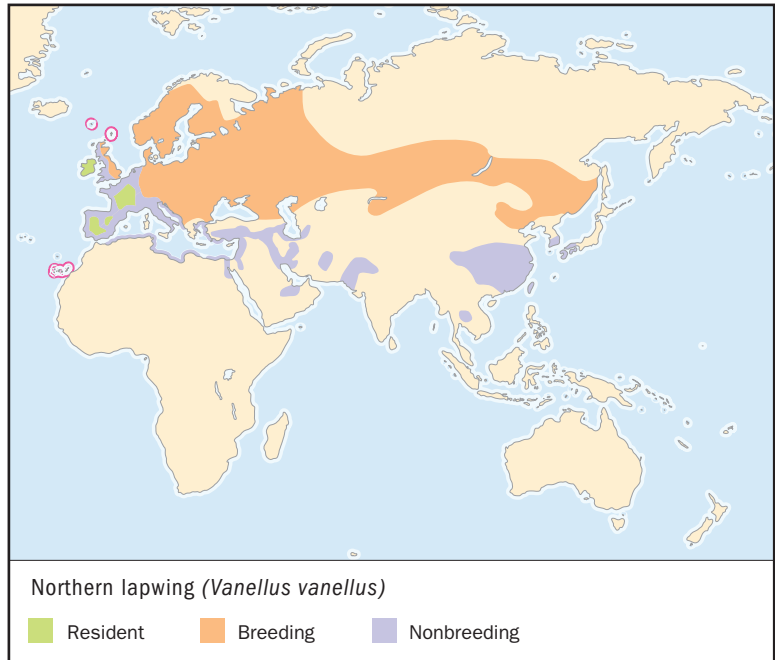


Killdeer may feign, or fake, injury to trick a predator. The predator will follow the “injured” bird away from its nest, keeping the chicks safe. (© JLM Visuals. Reproduced by permission.)

rooftops. Females lay four eggs at a time. Eggs hatch after twenty-five days. Parents may wet their feathers before sitting on eggs to help keep them cool. Parents also defend nest and chicks from predators, animals that hunt them for food, usually by distracting potential predators.

Killdeer and people: No significant interactions between people and killdeer are known.

Conservation status: Killdeer are not currently considered threatened, although populations may be in decline in eastern North America due to interference from human activity. ■



NORTHERN LAPWING

Vanellus vanellus

Physical characteristics: Northern lapwings have a long black crest, black neckband, green back, and white belly. The face is mostly black with a dark line extending under the eye.

Geographic range: Northern lapwings are found in Europe and Asia.

Habitat: Northern lapwings occupy diverse habitats including grasslands, fields, bogs, and deserts.

Diet: Northern lapwings eat a large number of earthworms as well as other invertebrates. In cold weather, they sometimes eat cattle dung.

Behavior and reproduction: Northern lapwings have been found in flocks of as many as 5,000 individuals, although flocks of about 100 are more common. Northern lapwings are usually monogamous, but there is some polygyny. Females usually lay four eggs at a time. These hatch after twenty-four to thirty-four days. Both parents help



Both northern lapwing parents help incubate the eggs and take care of chicks, but one of the parents, usually the female, typically deserts the nest before the young actually become independent. (Roger Wilmshurst/Bruce Coleman Inc. Reproduced by permission.)

incubate the eggs and take care of chicks, but one of the parents, usually the female, usually deserts the nest before the young actually become independent.

Northern lapwings and people: Northern lapwing eggs were once collected for food in Europe.

Conservation status: The Northern lapwing is not considered threatened. In fact, its breeding range in Europe has expanded in recent times. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Vaughan, R. *Plovers*. Lavenham, U.K.: Terence Dalton Limited, 1980.

Web sites:

“Charadriidae (Lapwings and Plovers).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=60> (accessed on May 6, 2004).

“Family Charadriidae (Plovers and Lapwings).” Animal Diversity Web, The University of Michigan Museum of Zoology. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Charadriidae.html#Charadriidae> (accessed on May 6, 2004).

“Plovers, Lapwings.” Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/charadriidae.html> (accessed on May 6, 2004).

family CHAPTER

SANDPIPERS Scolopacidae

Class: Aves

Order: Charadriiformes

Family: Scolopacidae

Number of species: 86 species

PHYSICAL CHARACTERISTICS

Sandpipers vary a great deal in size, from 4.7 to 26 inches (12 to 66 centimeters) in length and from 0.5 to 48 ounces (14.5 to 1,360 grams) in weight. Bill size and shape also vary a lot in the group, depending largely on the type of food eaten. Different sandpiper species have long or short bills, straight bills, upwardly curved bills, or downwardly curved bills. There are also more unusual bills, such as wedge-shaped bills and spoon-shaped bills, in the family. Some sandpipers have slender bodies, while others have plump bodies. Most species have short tails, long necks, long legs, and partially webbed toes. The wings tend to be long. Many sandpipers are colored to blend into their environments, although some species develop brighter black or reddish-colored patches during the breeding season. In many sandpipers, females and males are fairly similar in appearance. However, there are exceptions. In the ruff, for example, the male is 25 percent larger than the female and also has special feathers around the head and neck during the breeding season. Young sandpipers are generally colored to blend into their habitats.

GEOGRAPHIC RANGE

Sandpipers are found worldwide on all continents except Antarctica. A large number of sandpipers breed in the Northern Hemisphere and migrate to the tropics or to the Southern Hemisphere for the winter. Only a small number of sandpipers breed in the tropics. The sandpiper family includes species which breed the farthest north of any birds, including on Franz Joseph Land, the Zemlya Islands, and the northern tip of Greenland.

phylum
class
subclass
order
monotypic order
suborder

▲ family

HABITAT

Most sandpipers breed in inland freshwater wetlands, although a few species prefer to breed in coastal saltwater marshes. Snipes are found in marshes, swamps, and wet grassland habitats. Curlews make use of woodland, tundra, grassland, farmlands, and lakeshores. Some sandpiper species breed on gravelly or rocky tundra, treeless plains found in arctic regions. Woodcocks inhabit deciduous forests, forests where there are four seasons and trees lose their leaves in the fall. Favored wintering areas for sandpipers include tropical wetlands such as river mouths, lakeshores, and marshes. The phalaropes are unusual in that they are pelagic (puh-LAJ-ik), meaning they live on the open ocean, during the winter.

DIET

Sandpipers eat primarily invertebrates, animals without backbones, such as worms, mollusks, crustaceans, insects, and spiders. They also eat some vertebrates, animals with backbones, including small fish and amphibians. Some species will also eat plant material at certain times of year, often when insect prey is unavailable. Plant material eaten may include berries, rice, seeds, and green shoots.

Sandpiper species with short bills generally obtain food by pecking at it. Snipes and woodcocks probe mud with their bills to look for food. Shanks run after fish in shallow water with their bills submerged. They sometimes work together to drive entire schools of small fish into shallow areas. Phalaropes and a few other species peck tiny prey from the water, focusing on invertebrates such as shrimp and copepods. A few members of the family have unique feeding strategies. For example, turnstones flip over stones and shells to look for prey, and the Terek sandpiper runs after small burrowing crabs.

BEHAVIOR AND REPRODUCTION

During the nonbreeding season, many sandpiper species feed and rest in large flocks. Sandpipers also migrate in large flocks of just one species. Some sandpipers migrate distances as great as several thousand miles, having built up large fat deposits to sustain them during the trip.

During the breeding season, most sandpipers are territorial, and defend areas of land from other pairs. A few species, however, including the Asian dowitcher, common redshank, and some godwits and curlews, nest close together in breeding colonies. Most sandpiper species are monogamous (muh-NAH-guh-mus),

with a single male mating with a single female, during the breeding season. However, polygyny (puh-LIH-juh-nee), a single male mating with multiple females, describes the mating behavior of the Eurasian woodcock, white-rumped sandpiper, sharp-tailed sandpiper, and several other species. Polyandry (PAH-lee-an-dree), a single female mating with multiple males, is found in the spotted sandpiper and also in some phalaropes. In the phalaropes, females defend territories while males take care of the nests and chicks alone.

Courtship in sandpipers most frequently involves singing in flight and displays related to finding a site to build the pair's nest. Some species, including the ruff, buff-breasted sandpiper, and great snipe, have leks, special areas where males gather to display for females. Females go to the lek to choose a partner and mate. Species with leks are polygynous (puh-LIH-juh-nus), and males do not participate in care of eggs or young.

The sandpiper nest is most commonly a shallow indentation scraped in the ground and lined with vegetation. However, some species build more complicated nests or use old tree nests that have been abandoned by other birds. Females usually lay four eggs at a time, although some species lay only two or three. Eggs are colored to blend into the environment, and are typically pale with brown or black markings. Chicks hatch after about three weeks. Sandpiper chicks are precocial (pre-KOH-shul), meaning they hatch able to move and covered with down. Chicks usually leave the nest within a day of hatching. Woodcocks and snipes feed their young, but other species do not. However, sandpiper parents do protect their chicks from potential predators by pretending to be injured or by trying to look like rodents, fluffing up their feathers, running, and making squeaky noises. Nonetheless, in most species of sandpipers, fewer than half the chicks survive their first year.

SANDPIPERS AND PEOPLE

Many species in the family, particularly the snipe and woodcock, are widely hunted for food or sport. Some sandpipers are



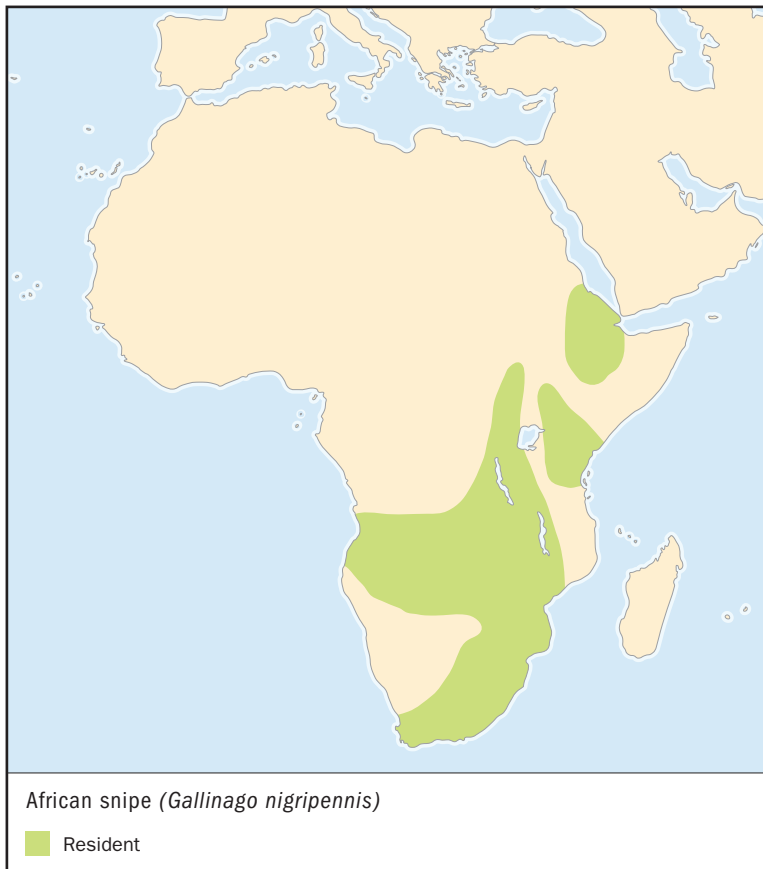
THE LEMMING FACTOR

Some species of sandpipers that breed in the Northern Hemisphere share their breeding habitats with small mammals called lemmings. Biologists have observed that in these areas, the breeding success of sandpipers moves in cycles that correspond to changes in the number of lemmings. When there are fewer lemmings, lemming predators such as arctic foxes catch and eat more adult and young sandpipers.

considered pests because they eat crops, particularly rice, whereas others actually help farmers by eating large numbers of insects. Some sandpipers have also played significant roles in human folklore. One group of Australian Aborigines performs a “sandpiper dance” since the arrival of the birds marks the beginning of the rainy season. In the Russian Far East, inhabitants of the Chukchi Peninsula imitate the impressive dance of lekking male ruffs.

CONSERVATION STATUS

Two species of sandpipers are known to have gone extinct since 1600 C.E. These are the white-winged sandpiper of Tahiti and Ellis’s sandpiper of Moorea. Both were probably driven to extinction by rats brought to their island habitats by humans. Of the eighty-six sandpiper species currently in existence, two are Critically Endangered, facing an extremely high risk of extinction, including the Eskimo curlew, which has not been seen since the 1980s, and the slender-billed curlew. Both species were hunted in large numbers by humans and also suffer from habitat loss. The Nordmann’s greenshank is Endangered, facing a very high risk of extinction in the wild, due to hunting and habitat loss. The tuamotu sandpiper is Endangered because of habitat loss and human-introduced predators. The Vulnerable, facing a high risk of extinction, species in the family include the spoon-billed sandpiper, bristle-thighed curlew, wood snipe, Chatham snipe, Amami woodcock, and Moluccan woodcock. These species are affected by factors such as hunting, habitat destruction and disturbance, and predators introduced by humans.



AFRICAN SNIPE

Gallinago nigripennis

SPECIES ACCOUNTS

Physical characteristics: African snipes range in size from 9.8 to 11.4 inches (25 to 29 centimeters) and weigh between 3 and 6 ounces (90 to 164 grams). Birds have dark backs and pale bellies. Females and males are generally similar in size and appearance except that females have somewhat longer bills.

Geographic range: African snipes are found in southern and eastern Africa.

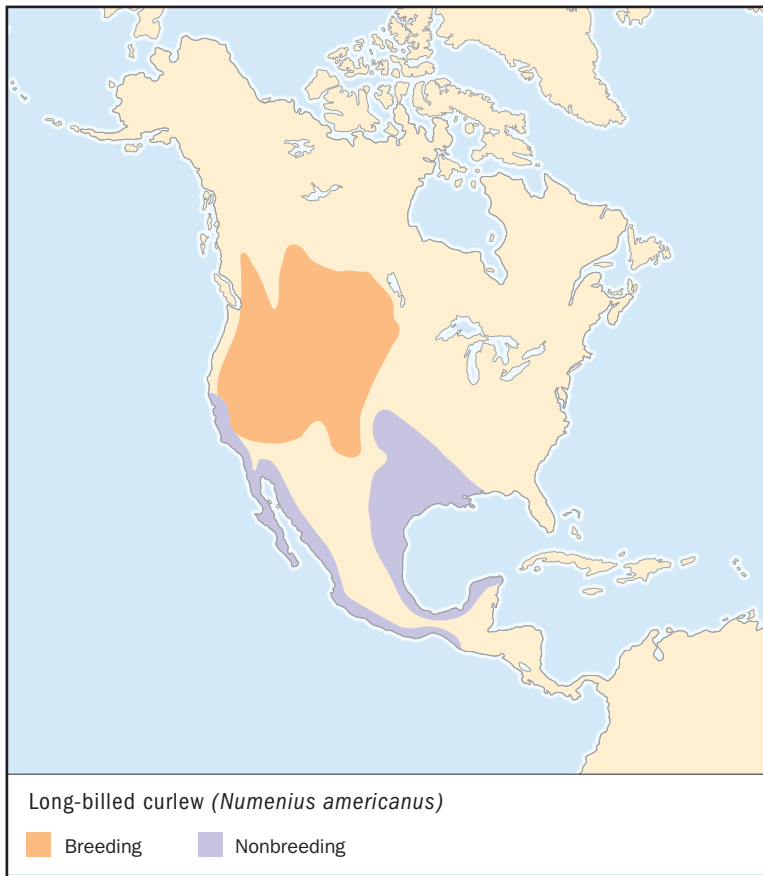
Habitat: African snipes occupy wetland habitats with areas of exposed mud and short vegetation.

Diet: African snipes eat primarily worms and insect larvae (LAR-vee). They forage, or search for food, at dusk and at night.

Behavior and reproduction: When disturbed, African snipes make a harsh calling noise and escape using a characteristic zigzag flight. Male African snipes attract females by making a “drumming” noise with their tail feathers. African snipes are monogamous, with a single male mating with a single female. Breeding occurs during or after the rainy season. The female lays two to three eggs at a time, generally in a hidden grassy area on moist or wet ground.

African snipes and people: No significant interactions between African snipes and people are known.

Conservation status: African snipes are not considered threatened. However, worldwide destruction of wetland habitats could endanger them in the future. ■



LONG-BILLED CURLEW

Numenius americanus

Physical characteristics: Long-billed curlews vary between 19.7 and 25.6 inches (50 to 65 centimeters) in length and weigh from 15.5 to 33.5 ounces (445 to 951 grams). The tip of the bill is shaped like a water droplet. The back is speckled black and the belly is cinnamon-colored. Females are larger than males and have longer bills.

Geographic range: Long-billed curlews are found in portions of North America and Central America.

Habitat: Long-billed curlews occupy grassland areas during the breeding season and wetlands such as marshes and estuaries

Long-billed curlews live in grassland areas during the breeding season and wetlands during the nonbreeding season. (Gary Meszaros/Bruce Coleman Inc. Reproduced by permission.)



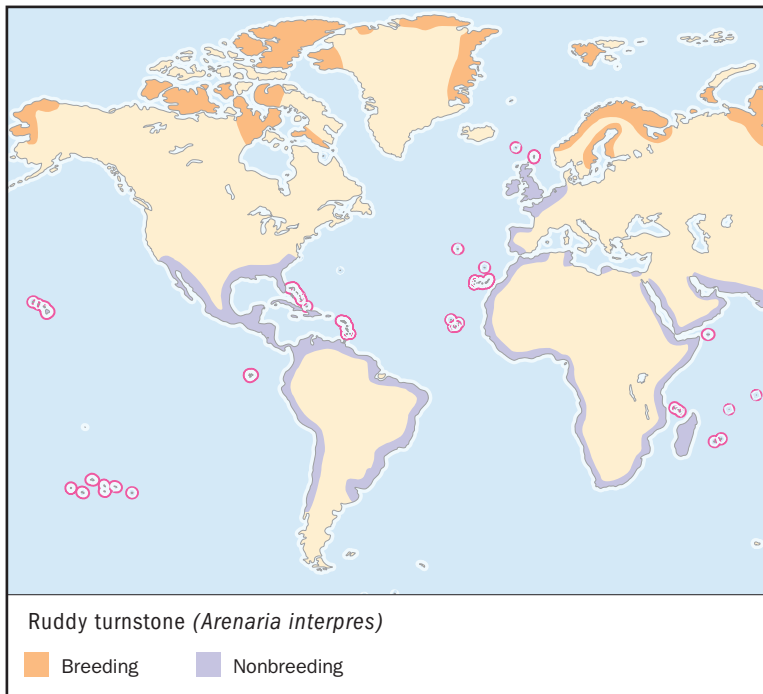
(EST-yoo-air-eez), where saltwater and freshwater mix, during the nonbreeding season. Long-billed curlews are sometimes found on farmland as well.

Diet: Long-billed curlews eat primarily insects, but also eat some crustaceans, mollusks, worms, frogs, and berries.

Behavior and reproduction: Long-billed curlews are monogamous, with a single male breeding with a single female. Pairs are territorial, defending their nesting area from other pairs. Females lay three to five eggs at a time, generally in short grass. Eggs hatch after twenty-seven or twenty-eight days.

Long-billed curlews and people: Long-billed curlews were once hunted in large numbers by humans, but are now protected by law.

Conservation status: Long-billed curlews are not considered threatened at this time. However, populations have declined in number due to loss of grassland habitat. ■



RUDDY TURNSTONE

Arenaria interpres

Physical characteristics: Ruddy turnstones range in length from 8.3 to 10.2 inches (21 to 26 centimeters) and from 3 to 6.7 ounces (84 to 190 grams) in weight. The head, neck, throat, and chest have bold black and white markings. The back is chestnut and black, while the belly is pale. Females and males differ somewhat in coloration.

Geographic range: Ruddy turnstones breed in high northern latitudes worldwide, and winter further south. Either breeding or wintering populations are found on all continents except Antarctica.

Habitat: Ruddy turnstones breed in tundra habitats as well as wetlands such as marshes and stony coastal plains. They spend the winter on rocky, stony, or sandy beaches.

Diet: Ruddy turnstones flip over stones to look for food. Their diet consists largely of insects, crustaceans, mollusks, worms, fish, carrion, and bird eggs.



Ruddy turnstones flip over stones to look for food. Their diet consists largely of insects, crustaceans, mollusks, worms, fish, carrion (dead animals), and bird eggs. (© Paul J. Fusco/Photo Researchers, Inc. Reproduced by permission.)

Behavior and reproduction: Ruddy turnstones are often found in flocks during the nonbreeding season. During the breeding season, they are found in isolated pairs. The female lays two to four eggs at a time, usually in open nests or in nests hidden in vegetation. Eggs hatch after twenty-two to twenty-four days.

Ruddy turnstones and people: No significant interactions between ruddy turnstones and people are known.

Conservation status: Ruddy turnstones are not considered threatened at this time. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

“Sandpipers, Curlews, Woodcocks, Phalaropes, etc.” Bird Families of the World, Cornell University. <http://www.eeb.cornell.edu/winkler/botw/scolopacidae.html> (accessed on June 3, 2004).

“Scolopacidae (Snipes and Sandpipers).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=61> (accessed on June 1, 2004).

SEEDSNIPES

Thinocoridae

Class: Aves

Order: Charadriiformes

Family: Thinocoridae

Number of species: 4 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Seedsnipes vary from 6 to 12 inches in length (16 to 30 centimeters) and from 1.8 to 14 ounces in weight (50 to 400 grams). They have plump bodies, short, thick bills, and short legs. The wings are long, narrow, and pointed. A membrane, thin layer of skin, covers the nostrils of seedsnipes to protect them from dust storms. Seedsnipes are generally colored to blend into their environments, and may be brown or rust-colored, and barred. Two of the four species have gray heads and necks and black markings on the throat or breast. Seedsnipes have large numbers of feathers to help protect them from cold weather.

GEOGRAPHIC RANGE

Seedsnipes are found in the New World (Western Hemisphere) tropics, occupying the Andes as well as the Patagonian and Peruvian coasts in western and southern South America.

HABITAT

Seedsnipes are found in cold, windswept areas, including rocky slopes, short grasslands, and bogs. They also occupy dry riverbeds and the shores of partly dried-up lakes.

DIET

Seedsnipes eat plant material exclusively. This includes buds, leaf tips, some seeds and succulents, plants with fleshy, water-storing stems or leaves. Despite their name, seeds are not a particularly important part of the seedsnipes' diet. Seedsnipes generally feed by biting food off with their bills and swallowing the food whole.

BEHAVIOR AND REPRODUCTION

During the nonbreeding season, seedsnipes may be found in flocks of as many as eighty individuals. During the breeding season, however, seedsnipes are usually found in pairs or in smaller groups of five or six. Seedsnipes spend a large part of their day walking slowly, looking for food. When they sense a threat, their first response is usually to turn their backs, which are colored to blend into the environment. Only if the intruder approaches will they walk away or fly away in a zigzag pattern, making loud calls.

Seedsnipes are territorial during the breeding season, with pairs defending areas from other pairs. The female typically lays three or four eggs at a time. The seedsnipe nest is usually a depression in the ground lined with bits of plant material. When neither parent is at the nest, the eggs are covered with soil or nest lining to help hide them and keep them warm. Eggs hatch after about twenty-six days in the least seedsnipe, the only species for which there is information. The chicks are able to leave the nest soon after hatching and quickly become able to feed themselves. However, both parents continue to help protect the young, often pretending to be injured to draw away potential predators and other intruders. Seedsnipes become sexually mature quickly, and are able to reproduce the same season they hatch.

SEEDSNIPES AND PEOPLE

Seedsnipes have little interaction with humans because of their extreme habitat. However, their loud calls sometimes enter the local folklore. Very rarely, they may be hunted.

CONSERVATION STATUS

No seedsnipes are considered threatened at this time. However, some populations have been affected by hunting and pollution.



QUICK MATURATION

There is evidence that chicks in some seedsnipe species become sexually mature, able to reproduce, extremely quickly. They mature so quickly, in fact, that they are able to breed the same season they hatched. This is an advantage because in some parts of the seedsnipe range, changing weather patterns means there is particularly abundant food once every four to ten years. Quick maturation enables even the newest chicks to take advantage of this.

SPECIES ACCOUNT



RUFIOUS-BELLIED SEEDSNIPE *Attagis gayi*

Physical characteristics: Rufous-bellied seedsnipes are 10 to 11 inches in length (27 to 30 centimeters) and weigh between 10.6 and 14.1 ounces (300 to 400 grams). The head, neck, back, and breast are barred black, brown, and cream, a pattern that allows individuals to blend in with their environment. The belly is reddish brown or a pink cinnamon in color.

Geographic range: Rufous-bellied seedsnipes are found in the Andes of Chile, Argentina, Bolivia, Peru, and Ecuador. They generally occupy

high altitudes, of at least 3,300 feet (1,000 meters) in some areas and much higher in other areas.

Habitat: Rufous-bellied seedsnipes occupy rocky slopes and alpine bogs.

Diet: Rufous-bellied seedsnipes eat the buds and leaf tips of cushion plants found in their habitat.

Behavior and reproduction: Rufous-bellied seedsnipes are usually found in pairs or small groups. They make loud calls that are described as cackles. Rufous-bellied seedsnipes are monogamous (muh-NAH-guh-mus), with a single male breeding with a single female. The female lays four eggs at a time into a nest that is usually just a scraped indentation in the ground with little or no lining. When neither parent is incubating, or sitting on, the eggs, they are covered with dirt to help keep them warm and hide them.

Rufous-bellied seedsnipes and people: Rufous-bellied seedsnipes are hunted by local populations. Other than that, there is no significant interaction between rufous-bellied seedsnipes and people.

Conservation status: Rufous-bellied seedsnipes are not currently considered threatened. However, because they are hunted near mines in their range, some populations have been drastically reduced in numbers. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Fjeldså, Jon, and Niels Krabbe. *Birds of the High Andes*. Copenhagen: Zoological Museum, University of Copenhagen, 1990.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Family Thinocoridae (Seedsnipe)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Thinocoridae.html#Thinocoridae> (accessed on June 1, 2004).



Rufous-bellied seedsnipes live in wetlands of the high Andes Mountains. (© Fletcher and Baylis/Photo Researchers, Inc. Reproduced by permission.)

“Seedsnipes.” Birds of the World, Cornell University. <http://www.eeb.cornell.edu/winkler/botw/thinocoridae.html> (accessed on June 4, 2004).

“Thinocoridae (Seedsnipes).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=63> (accessed on June 1, 2004).

family CHAPTER

SHEATHBILLS

Chionidae

Class: Aves

Order: Charadriiformes

Family: Chionidae

Number of species: 2 species

PHYSICAL CHARACTERISTICS

Sheathbills vary in size from 13.4 to 16.1 inches (34 to 41 centimeters) in length and from 16 to 27 ounces (450 to 760 grams) in weight. They have plump bodies, short legs, and short conical, cone-shaped, bills with a horny sheath covering the upper bill. Sheathbills also have unusual featherless patches on the face covered with wart-like bumps called caruncles (KAR-un-kulz). The rest of the sheathbill body is covered with white feathers. Pale-faced sheathbills have a greenish sheath on the bills and pink caruncles, whereas black-faced sheathbills have black bill sheaths and black caruncles. Males are larger than females in the sheathbills, generally weighing about 15 percent more. Males also have larger bills and larger sheaths. Adult birds have more caruncles on their faces than younger birds. Older birds also have spurs on their wings which they use for defense and in fights.

GEOGRAPHIC RANGE

Sheathbills are found along the Antarctic Peninsula, on islands of the subantarctic, and in the southern parts of South America.

HABITAT

Sheathbills are found primarily on coastal plains and in coastal wetlands. They are generally found in the vicinity of large seabird colonies. During the nonbreeding season, sheathbills may be found in meadows, bogs, and ice floes, sometimes as far as 0.6 miles (1 kilometer) inland.

phylum

class

subclass

order

monotypic order

suborder

▲ family



THE IMPORTANCE OF SEABIRDS TO SHEATHBILLS

Most sheathbills are found in close association with colonies of penguins or other seabirds and obtain much of their food from penguin eggs or chicks, or by stealing food from adult penguins returning to feed their young. One population of sheathbills, however, found on the Kerguelen Islands, does not have seabird colonies available to it. These sheathbills lay fewer eggs at a time and produce fewer young overall.

DIET

Sheathbills are omnivores, they eat substantial amounts of both plant and animal matter. Because they live in harsh environments where conditions often change quickly, sheathbills are opportunistic feeders that are able to take advantage of whatever food becomes available. In most areas, sheathbills feed largely on the eggs, chicks, and even excrement of penguins and other seabirds. They also try to intercept adult seabirds returning to feed their chicks and either steal the food outright, or jostle the adults enough that some of the food is spilled. Food obtained in this way is critical to sheathbill survival, but does not have a very large impact on the seabirds. Sheathbills will also eat carrion, dead and decaying flesh, usually dead seal pups, as well as seal placentas, the organ that attaches to the uterus during pregnancy. When foods de-

rived from seabirds and seals are unavailable, sheathbills survive by eating seaweed and invertebrates.

BEHAVIOR AND REPRODUCTION

Sheathbills are monogamous (muh-NAH-guh-mus), a single male mates with a single female during the breeding season. Sheathbill pairs are territorial, and defend nesting and feeding areas within seabird colonies from other pairs of sheathbills. Territorial disputes are resolved by calling, displays, chases, and sometimes, actual battles.

The timing of the breeding season varies among populations of sheathbills, since breeding usually occurs whenever local seabirds are breeding. This strategy allows for plentiful food resources to be available when sheathbill chicks hatch. Females lay one to three eggs at a time, usually in November or December. Eggs are laid in crude nests built from feathers, bones, shells, rocks, and plant material. Nests are usually built in small caves or cracks, usually in rocky areas. However, some sheathbills will nest in the abandoned burrows of other species. Sheathbill eggs are white, flecked with brown or gray, and somewhat pear-shaped. Chicks hatch after twenty-eight to thirty-two days, and are partially covered with feathers when they hatch. Unlike the

parents, chicks are brownish in color. Chicks stay near the nest for one to three weeks after hatching and are fed by their parents. The primary cause of death for chicks is starvation, although some chicks are also eaten by predators, animals that hunt them for food.

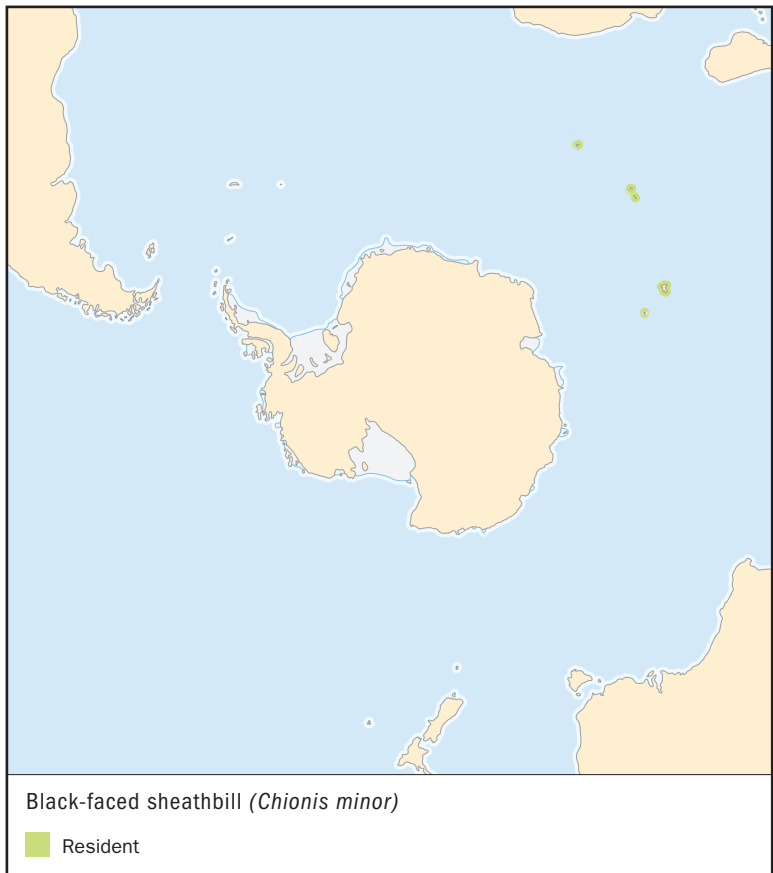
SHEATHBILLS AND PEOPLE

Because of their range, sheathbills have little contact with people. However, near Antarctic research stations, they have been known to eat food scraps and human excrement. They sometimes also nest in abandoned stations.

CONSERVATION STATUS

Neither of the two species of sheathbills is currently considered threatened. However, some predators brought by humans, including cats and mice, sometimes eat sheathbill chicks or eggs.

SPECIES ACCOUNT



BLACK-FACED SHEATHBILL *Chionis minor*

Physical characteristics: Black-faced sheathbills range from 15 to 16.1 inches in length (38 to 41 centimeters) and from 19 to 32 ounces (540 to 900 grams) in weight. They have a wingspan, distance from wingtip to wingtip, of 29.1 to 31.1 inches (74 to 79 centimeters). They have black bills, black sheaths, and black carbuncles on their faces. The feathers are all white.

Geographic range: Black-faced sheathbills are found on a handful of subantarctic islands in the Indian Ocean. These include Marion, Prince Edward, Crozet, Kerguelen, Heard, and McDonald Islands.

Habitat: Black-faced sheathbills are found in the colonies of penguins and other seabirds, typically on rocky or sandy beaches. They may also occupy meadows and bogs close to shore.

Diet: Black-faced sheathbills eat the eggs, chicks, and excrement of seabirds. They also steal food that seabird parents bring back for their chicks. Black-faced sheathbills may also eat dead seal pups and seal milk. If these aren't available, they eat algae and invertebrates.

Behavior and reproduction: Black-faced sheathbills do not migrate, but remain in one place throughout the year. Pairs defend their territories from other sheathbills all year round. Black-faced sheathbills are most often associated with colonies of king penguins. Black-faced sheathbills are monogamous, with a single male breeding with a single female. The female lays two to three eggs in December or January, with breeding at the same time as that of the seabirds among which they live. Chicks hatch after twenty-seven to thirty-three days.

Black-faced sheathbills and people: Black-faced sheathbills have little interaction with people. They sometimes eat food scraps left by humans near research stations or eat human excrement.

Conservation status: Black-faced sheathbills are not considered threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Parmalee, D. F. *Antarctic Birds: Ecological and Behavioral Approaches*. Minneapolis: University of Minnesota Press, 1992.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Chionidae (Sheathbills)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=64> (accessed on June 1, 2004).

"Family Chioniae (Sheathbill)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Chionidae.html#Chionidae> (accessed on June 1, 2004).

"Sheathbills." Birds of the World, Cornell University. <http://www.eeb.cornell.edu/winkler/botw/chionidae.html> (accessed on June 4, 2004).

GULLS, TERNS, AND RELATIVES

Laridae

Class: Aves

Order: Charadriiformes

Family: Laridae

Number of species: 105 species

family CHAPTER

PHYSICAL CHARACTERISTICS

Gulls, terns, and their relatives vary between 8 and 32 inches (20 to 81 centimeters) in length and between 1.6 and 74 ounces (46 to 2,100 grams) in weight. Gulls and terns generally have white bellies and gray or black backs. Males and females are similar in both size and coloration. Young birds, however, are usually spotted or streaked to help them blend in with their environments. During the breeding season, some gulls develop a pink or cream colored patch on the breast. Gulls have heavy bodies and long wings. Terns have narrower, longer bodies and long, slender, pointed wings. Their bills are slender and pointed. Many terns develop a black crown on top of the head during the breeding season.

Skimmers have heavy bodies and long, narrow wings. Their bills are large and laterally compressed, flattened from left to right. In skimmers, males are often significantly larger than females. Most skimmers have black backs and white bellies, although during the breeding season the legs may become cream colored.

Skuas and jaegers (YAY-gerz) have body shapes similar to that of gulls, but have heavy, hooked bills. They are exceptionally powerful fliers. Females are larger than males.

GEOGRAPHIC RANGE

Gulls and terns are found in coastal regions worldwide. Skimmers are found in temperate, not too hot or too cold, and tropical regions in North America, South America, Africa, and Asia. Skuas and jaegers are found in temperate and polar areas.

phylum

class

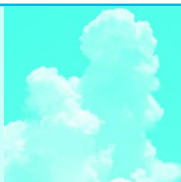
subclass

order

monotypic order

suborder

▲ **family**



ASYNCHRONOUS HATCHING IN SKUAS

Female skuas usually lay two eggs at a time. The two skua eggs hatch asynchronously (ay-SIN-kron-us-lee), that is, one egg hatches two or three days before the other. Asynchronous hatching allows the first chick to be larger and stronger than the other. In years where there is little food, parents can usually raise only one chick and so only the first chick survives.

HABITAT

Terns frequently nest on islands or in coastal areas where there are few predators. They may also avoid predators by nesting on cliffs, in trees, or even in the water on floating vegetation. Gulls nest in coastal areas as well as in wetlands or along the shores of large lakes. Gulls use beaches, marshes, river or lakeshores, sand dunes, cliffs, trees, and buildings as nest sites. One species, the gray gull, breeds in the mountainous deserts of Chile and flies over the Andes mountains each day to find food in the Pacific Ocean. During the nonbreeding season, gulls will make use of almost any habitat close to open water. Skimmers nest on coastal beaches or in salt marshes, and move to the open ocean during the nonbreeding season. Skuas breed on tundra or grassy islands. The

south polar skua nests near colonies of breeding petrels and penguins.

DIET

Gulls eat a wide variety of foods. Many obtain fish and invertebrates, animals without backbones, from the seashore. Some species take advantage of human garbage or beg for handouts from people. Gulls have a wide variety of methods for obtaining food, including walking on the ground, searching in the water, and diving. They are also known to drop mollusks and other hard-shelled animals from a large height to crack the shells. Terns usually dive in the ocean for fish. Skimmers catch prey by skimming along the water with their lower bills underwater. Skimmers usually forage, search for food, either at dusk or at night. Skuas and jaegers are predatory, feeding on other bird species such as murre, gulls, and penguins.

BEHAVIOR AND REPRODUCTION

Aside from skimmers and two species of gulls, most members of the gull and tern family are diurnal, active during the day. During the breeding season, gulls and terns nest in small or large colonies. Terns in particular are found in very large groups that may include millions of individuals. Gulls and terns

are territorial during the breeding season, defending a small area around the nest from other individuals of the species. Most gulls and terns will mob potential predators and intruders, with many birds attacking simultaneously. This strategy is very successful against other bird species, but does not work as well with mammalian predators.

Skimmers are nocturnal, active at night. They nest in colonies, sometimes ones that include gulls and terns. The members of a skimmer pair usually face in opposite directions while at the nest to more effectively scan for predators. Skuas and jaegers tend to be found alone, although they sometimes form foraging flocks over schools of fish.

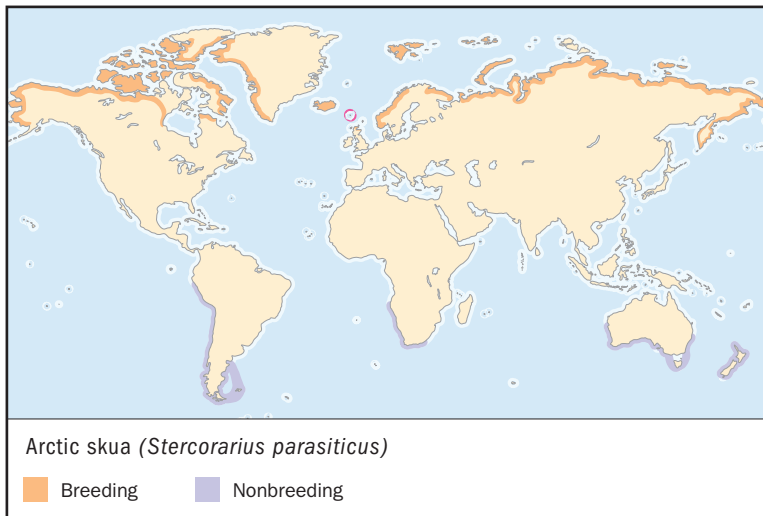
Gulls, terns, and their relatives are monogamous (muh-NAH-guh-mus), with each male breeding with a single female. In many species, individuals keep the same mates from one year to the next. Pairs that stay together are often able to raise more young than newly mated pairs. However, in many gulls, individuals of both sexes sometimes copulate, breed, with birds other than their mates. Both male and female participate in incubating, or sitting on the eggs, defending the territory from intruders, and feeding and protecting the young once they hatch. Females lay one to three eggs at a time. The eggs are usually brown with dark markings. Eggs hatch after twenty to thirty days, and chicks are able to fly after four to six weeks. If the eggs or chicks are lost, particularly early in the breeding season, the female will often lay a new set of eggs. Chicks generally remain with their parents for some time after leaving the nest, particularly among the terns, where young have to learn the difficult art of diving for food. Some young terns will migrate with their parents and spend much of the winter with them.

GULLS, TERNS, RELATIVES, AND PEOPLE

In the 1800s, gull and tern feathers, and sometimes even whole birds, were used to decorate women's hats. The eggs of certain species have been, and continue to be, collected for food. Some eggs are considered aphrodisiacs (aff-roh-DEE-zee-acks), substances that enhance sexual desire, in parts of the world. Adult gulls and terns are also sometimes hunted for food. Gulls and terns were sometimes used as a sign that land was nearby by sailors, and terns are still used to locate schools of fish. Because of their more remote tundra habitats, skuas and jaegers have interacted less with human beings.

CONSERVATION STATUS

Chinese crested terns are Critically Endangered, facing an extremely high risk of extinction. Threats to gulls and terns include habitat destruction and disturbance, hunting, egg collection, predation by cats and other species associated with humans, pollution from oil spills and pesticides.



ARCTIC SKUA

Stercorarius parasiticus

SPECIES ACCOUNTS

Physical characteristics: Some Arctic skuas are entirely brown, while others have a dark gray head, white neck and belly, and dark back and wings.

Geographic range: Arctic skuas are found in far northern coastal areas, near the North Pole, during the breeding season. They spend the winter in the Southern Hemisphere in coastal areas.

Habitat: Arctic skuas breed on tundra, treeless plains found in arctic regions, or grasslands. During the nonbreeding season, they occupy ocean areas close to land.

Diet: Arctic skuas eat lemmings and the eggs and chicks of other seabirds.

Behavior and reproduction: Arctic skuas are diurnal, active during the day. They are often found with other birds, particularly alcids (birds in the family Alcidae), gulls, and terns, while breeding and searching for food.

Arctic skuas and people: Arctic skuas are sometimes shot by humans who believe they damage sheep and other livestock.

Conservation status: Arctic skuas are not considered threatened at this time. ■



SAUNDER'S GULL

Larus saundersi

Physical characteristics: Saunder's gull has a black head and neck, white throat and belly, white eye crescents, and gray back. The bill is red with a dark band. Juveniles and nonbreeding adults are primarily white.

Geographic range: Saunder's gulls breed in coastal areas of eastern China and spend the winter in South Korea, southern Japan, and North Vietnam.

Habitat: Saunder's gulls live in coastal wetland areas during the breeding season. In the winter they are generally found in seashore areas.

Diet: Saunder's gulls forage, search for food, along the coast in mudflats as well as in coastal lagoons.

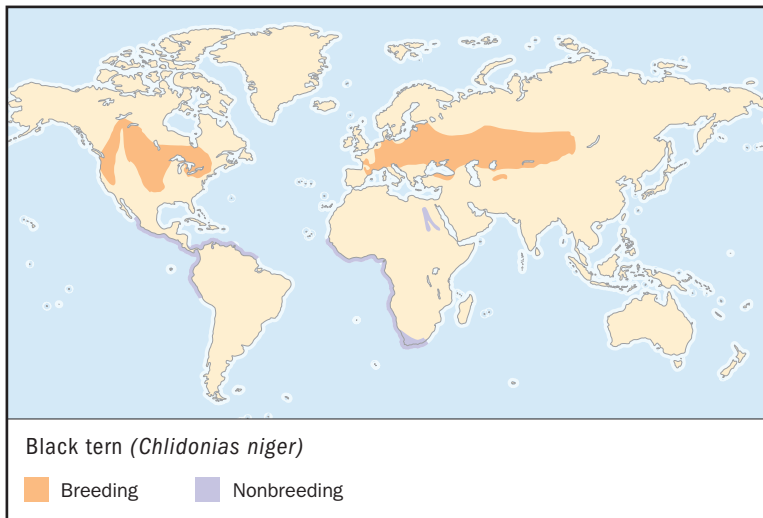


Saunders' gulls form breeding colonies on coastal salt marshes and spend the winters at the seashore. (Illustration by Brian Cressman. Reproduced by permission.)

Behavior and reproduction: Other than the fact that they are diurnal, little is known about the behavior of Saunders' gulls. Saunders' gulls form breeding colonies on coastal salt marshes. The female lays three eggs at a time.

Saunders' gulls and people: Local populations collect the eggs of this species for food.

Conservation status: Saunders' gulls are considered Vulnerable, facing a high risk of extinction in the wild. The total population is under 5,000 individuals. Decline has been due primarily to habitat loss for agriculture and oil exploration. ■



BLACK TERN *Chlidonias niger*

Physical characteristics: Black terns have black heads, necks, and breasts. Their backs and bellies are dark gray in color. Juveniles and nonbreeding adults are pale gray on the back and white on the belly and head, with a dark patch on the side of the breast.

Geographic range: Black terns are found in temperate North America, Europe, and Eastern Asia during the breeding season. They spend the winter in Central and South America and in Africa.

Habitat: Black terns breed in inland habitats such as ponds, lakes, and marshes. In the winter, they occupy seashore and coastal wetland habitats.

Diet: Black terns eat aquatic insects, snails, small fish, tadpoles, and frogs.

Behavior and reproduction: Black terns breed in small colonies, generally fewer than twenty individuals, although colonies of as many as a hundred birds have been seen. A single male mates with a single female, and both parents help incubate, sit on, the eggs as well as take care of young. The black tern nest is usually built on top of



The black tern nest is usually built on top of floating vegetation. Both parents help incubate, sit on, the eggs as well as take care of young. (© John Mitchell/Photo Researchers, Inc. Reproduced by permission.)

floating vegetation. The female lays two to three eggs at a time, and these hatch after twenty to twenty-three days. Chicks leave the nest after twenty-five days.

Black terns and people: The preferred nesting areas of black terns include the small lakes or marshes that are often drained by humans.

Conservation status: Black terns are not considered threatened. However, some populations have declined due to destruction of wetland habitats, pesticides, and competition with human-introduced fish for food. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

“Family Laridae (Gulls and Terns).” Animal Diversity Web, The University of Michigan Museum of Zoology. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Laridae.html#Laridae> (accessed on June 1, 2004).

“Family Rynchopidae (Skimmers).” Animal Diversity Web, The University of Michigan Museum of Zoology. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Rynchopidae.html#Rynchopidae> (accessed on June 1, 2004).

“Laridae (Gulls).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=66> (accessed on June 1, 2004).

“Rynchopidae (Skimmers).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=68> (accessed on June 1, 2004).

“Sternidae (Terns).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=67> (accessed on June 1, 2004).

AUKS, PUFFINS, AND MURRES

Alcidae

Class: Aves

Order: Charadriiformes

Family: Alcidae

Number of species: 23 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Alcids, species in the Alcidae family, range from 6 to 17 inches (12 to 45 centimeters) in length and from 0.17 to 2.4 pounds (0.4 to 1.1 kilograms) in weight. They have narrow, short wings and short tails. Their toes are webbed. Alcids are primarily black, white, and gray in color, although some species have brown feathers during parts of the year. Males and females are similar in coloration. These birds also have a striking upright posture, one of the physical features that makes them well-suited to diving and “flying” underwater. All species are also able to fly in the air, although many need a running start to become airborne.

Bill shape varies a great deal in the group. The razorbill has a long, sharp bill. Puffins have deep bills that are laterally compressed, flattened left to right. The dovekie has a short, pointed bill. Guillemots have straight bills. The parakeet auklet has an unusual bill in which the lower half turns upward at the tip. This bill helps it catch its primary prey, jellyfish.

GEOGRAPHIC RANGE

Auks and their relatives are found in the Northern Hemisphere, in oceanic habitats in the Arctic, North Atlantic, and North Pacific.

HABITAT

Auks and their relatives are found in cold ocean waters. They breed in seashore areas such as shorelines, seaside cliffs, and, in some species, coastal forests.

DIET

Large members of the auk family, including murres, razorbills, puffins, and guillemots, eat primarily small fish. They sometimes also eat invertebrates, animals without backbones, such as squid and crustaceans. Smaller members of the family, such as the dovekie, eat primarily marine invertebrates such as crustaceans and mollusks. Many species fly far out over the ocean in search of food. Auks and their relatives capture food by resting on the surface of the water and then diving down after prey, propelling themselves forward with their wings.

BEHAVIOR AND REPRODUCTION

Auks are capable, but not strong, fliers. Most species require a lengthy running start over water before they are able to take to the air. However, all species are very good swimmers and divers. Auks and their relatives use their wings to propel themselves through the water. Their webbed feet, which are stretched out during swimming, act as a rudder and help them change or maintain direction. Some species have been known to reach depths as great as 600 feet (183 meters).

Auks and their relatives are monogamous (muh-NAH-guh-mus), a single male mates with a single female. However, the same mates are not necessarily kept from one breeding season to the next. Many individuals do, however, return to the same nesting site year after year. Eight of the twenty-three auk species mate on the open ocean. Both parents help incubate, or sit on, eggs, and both help feed and protect the young once they hatch. In most species, the female lays only one large egg which may represent 10 to 20 percent of the female's total weight. Chicks are covered with dense down at birth and are able to see. In several species, chicks leave the nest after two or three weeks and go with their fathers to live on the open ocean until they become independent.

AUKS, PUFFINS, MURRES, AND PEOPLE

Several species are hunted in large numbers in parts of Greenland, Canada, and Alaska.

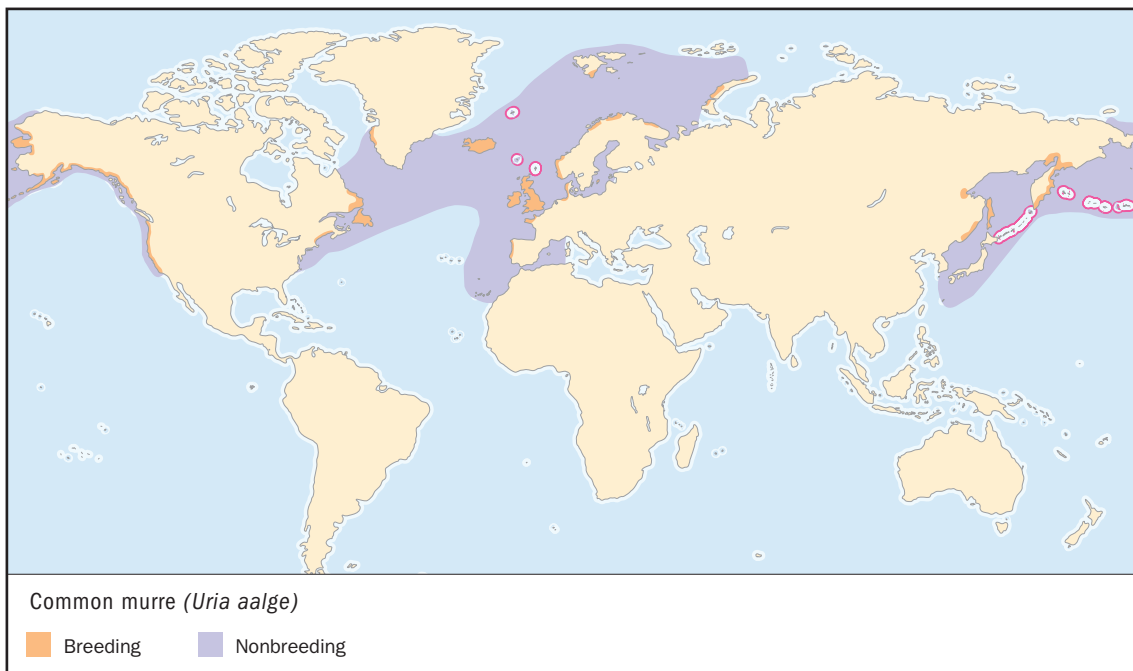


MATING AT SEA

Eight species in the auk family mate at sea, an unusual breeding strategy. There are several possible reasons why this may be advantageous. Mating at sea may help auks avoid land predators. It may help male auks avoid competition and interference from other males of the same species. Finally, some biologists believe that female auks may use sea mating to figure out which males are healthiest and strongest, and would therefore make the best mates.

CONSERVATION STATUS

The great auk became Extinct, died out, around 1844 C.E. due to hunting by humans. Several currently existing auk species are considered Vulnerable, facing a high risk of extinction in the wild in the medium-term future, including Xantus's murrelet and the marbled murrelet. Xantus's murrelets are threatened by habitat damage in their breeding grounds in Baja California and on islands off the coast of Southern California. They have also been affected by predators associated with humans such as cats and rats. Marbled murrelets, which occur in areas of the United States, have been affected primarily by habitat loss. Both species are listed as Threatened by the U.S. Fish and Wildlife Service. Other members of the auk family are affected by habitat destruction and damage as well as by oil spills and fishing nets.



COMMON MURRE

Uria aalge

SPECIES ACCOUNTS

Physical characteristics: Common murres have black-brown heads and backs. Their bellies are white. They have long, slender, pointed black bills.

Geographic range: Common murres are found from California to Alaska on the western coast of North America. On the eastern coast of North America they can be seen from New England to Labrador. They are also range from Siberia to Japan and Korea.

Habitat: Common murres inhabit rocky seashore areas during the breeding season, but spend most of the rest of the time on the open ocean.

Diet: Common murres eat primarily fish. They also eat some marine invertebrates.

Behavior and reproduction: Common murres are fast, able fliers often found in large flocks. Their calls sound like the purr of a cat.

Murres stay in rocky seashore areas during the breeding season, but spend most of the rest of the time on the open ocean.

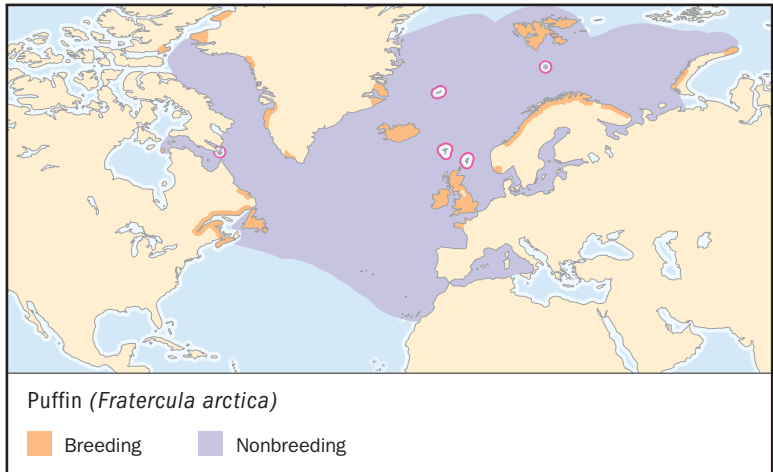
(© Stephen J. Krasemann/Photo Researchers, Inc. Reproduced by permission.)



During the breeding season, common murres nest in large colonies, which may include other species of birds. The female lays a single egg on bare rock. Parents are able to recognize their egg visually by its markings, and can find their own egg if it happens to roll away. Eggs hatch after thirty-two to thirty-five days. The chick leaves the nest after twenty to twenty-two days. Chicks follow their fathers to open ocean and are cared for until they become independent.

Common murres and people: Common murres are hunted in large numbers in Newfoundland.

Conservation status: Common murres are not considered threatened at this time. However, populations have been affected by habitat disturbance and hunting. ■



PUFFIN

Fratercula arctica

Physical characteristics: Puffins have a very distinctive large, yellow and orange bill with a blue-gray base. Their faces are white to gray with a thick black band from the forehead back. Their backs are black and their bellies white. Their legs and feet are orange.

Geographic range: Puffins breed on seashore areas of North America and Europe. They spend the winter in the waters of the North Atlantic.

Habitat: Puffins inhabit rocky seashore areas and islands during the breeding season. They spend the winter at sea.

Diet: Puffins primarily eat fish. When feeding young, adults are known to carry dozens of fish back at a time in their large bills.

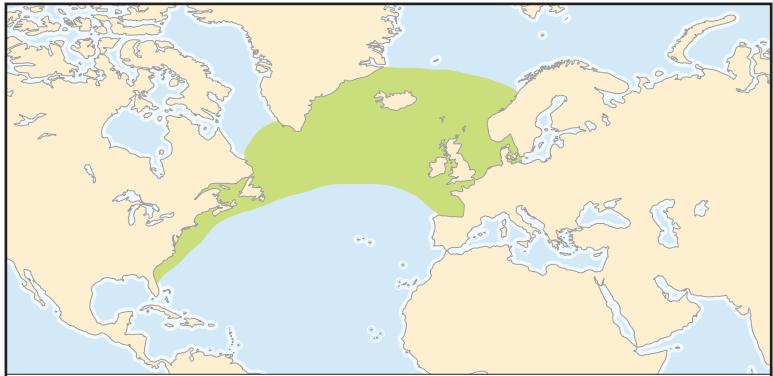
Behavior and reproduction: Puffins are strong fliers and spend most of their time at sea, except during the breeding season. At sea, puffins may be found in flocks with other species such as murres and razorbills. Puffins also mate at sea. Courtship, behavior that leads to mating, involves the male and female tapping their bills together. Puffins build nests at the end of long burrows which they dig in the ground. The female lays a single egg. The chick hatches with a thick coat of down and is able to leave the nest after thirty-six to forty-seven days.



Puffins use their large bills to carry dozens of fish at a time back to the nest to feed their young. (John Shaw/Bruce Coleman Inc. Reproduced by permission.)

Puffins and people: No significant interactions between puffins and people are known.

Conservation status: Puffins are not considered threatened at this time. ■



Great auk (*Pinguinus impennis*)

Resident

GREAT AUK *Pinguinus impennis*

Physical characteristics: Great auks were the largest members of the auk family, measuring 30.5 inches (78 centimeters) in length and 11 pounds (5 kilograms) in weight. They had black heads and backs, black wings, black feet, and white bellies.

Geographic range: Great auks were once found in the North Atlantic, between the Arctic Circle, New England, and the British Isles.

Habitat: Great auks were found in rocky seashore areas as well as in adjacent open ocean.

Diet: Great auks ate mainly fish.

Behavior and reproduction: Great auks were unable to fly. They spent the winter primarily at sea. During the breeding season, great auks were found in huge colonies on a small number of islands. Females laid a single egg on bare rock. Eggs had unique markings which likely allowed parents to recognize their own egg.

Great auks and people: Great auks were driven to extinction by human hunting. Because they were unable to fly and gathered in large numbers during the breeding season, they were extremely easy to hunt.

Their feathers were collected and their bodies were boiled to extract valuable oil. Their eggs were also collected.

Conservation status: Great auks went extinct sometime around 1844 C.E. due to human hunting and egg collection. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 3, *Hoatzin to Auks*. Barcelona: Lynx Edicions, 1996.

Fuller, E. *The Great Auk*. New York: Harry N. Abrams, 1999.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Alcidae (Auks)." *The Internet Bird Collection*. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=69> (accessed on June 8, 2004).

"Family Alcidae (Auks)." *Animal Diversity Web, The University of Michigan Museum of Zoology*. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Alcidae.html#Alcidae> (accessed on June 8, 2004).



Great auks were unable to fly, which made them easy to hunt. They went extinct in the 1800s due to human hunting and egg collection. (Illustration by Patricia Ferrer. Reproduced by permission.)

monotypic order

CHAPTER

SANDGROUSE

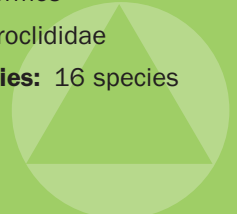
Pterocliiformes

Class: Aves

Order: Pterocliiformes

One family: Pteroclididae

Number of species: 16 species



PHYSICAL CHARACTERISTICS

Sandgrouse vary in size from 9.8 to 19 inches (25 to 48 centimeters) in length and 4.6 to 19.4 ounces (130 to 550 grams) in weight. Sandgrouse are generally colored to blend into their environments. Females and males have different coloration in most species, with females being colored more similarly to their environments. Sandgrouse are also characterized by extremely dense down that is well suited to their sometimes cold habitats. Some sandgrouse have partially feathered legs, while other species have feathers covering all of their legs and toes. Sandgrouse have short legs and long, pointed wings. They are good runners and extremely good fliers.

GEOGRAPHIC RANGE

Sandgrouse are found exclusively in the Old World, including portions of Africa, Europe, the Middle East, India, China, and Mongolia.

HABITAT

Sandgrouse are found in desert and semi-desert areas as well as in various grassland habitats.

DIET

Sandgrouse eat seeds almost exclusively. They pick seeds off the surface of the ground, and may also look for buried seeds by flicking away the surface layer of sand with their bills. Sandgrouse also drink water frequently, often daily. They drink by

phylum

class

subclass

order

● **monotypic order**

suborder

family



WATERING CHICKS

Sandgrouse, which generally occupy extremely dry habitats, have an unusual way of providing water to chicks that is not seen in any other group of birds. The male parent flies to the watering hole and dips his belly feathers in water. He then flies back to the nest, where the chicks take water from his feathers. The male continues to do this regularly for several weeks, until the chicks are able to fly to the watering hole themselves.

dipping their bills in water and sucking, and then raising their heads to swallow.

BEHAVIOR AND REPRODUCTION

Sandgrouse feed, rest, and nest on the ground. They fly to water every day, a trip that, depending on the population, can be as far as 75 miles (120 kilometers) round-trip. Sandgrouse are generally found in large flocks that can include several hundreds or even thousands of individuals. Because sandgrouse occupy desert habitats, they generally forage, or search for food, during the cooler hours of the day.

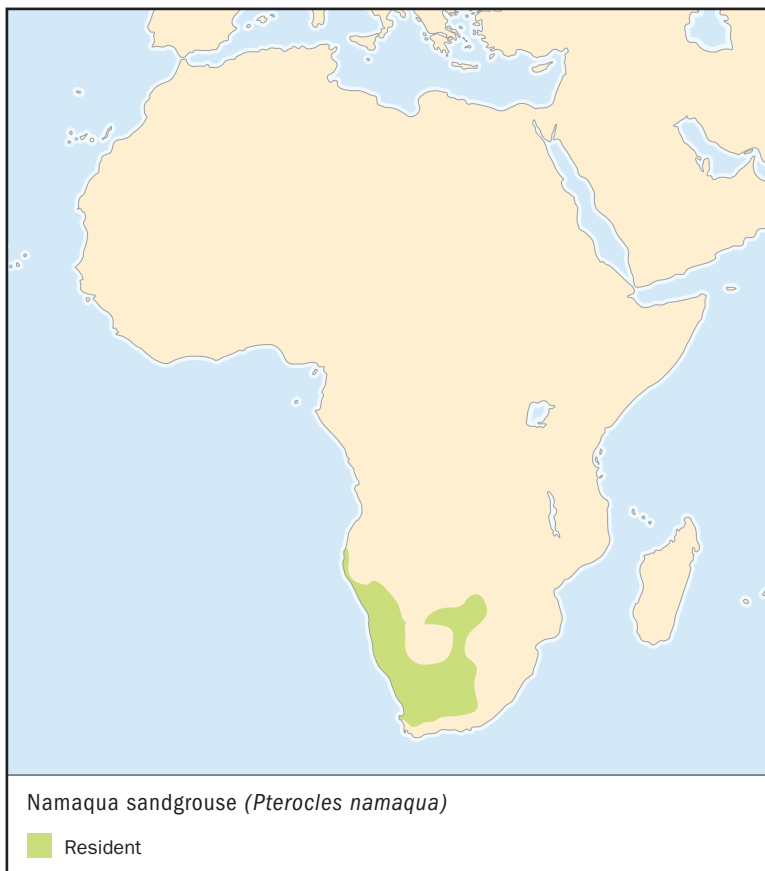
During the breeding season, sandgrouse are monogamous (muh-NAH-guh-mus), a single male mates with a single female. Nests are made by scraping the ground, often in the shade of a small plant. Nests may be lined with stones or with bits of vegetation. The female lays three eggs at a time. Sandgrouse eggs are long and spotted. The female incubates, sits on, the eggs during the day, while the male incubates during the night hours. Chicks hatch after twenty-one to thirty-one days. Parents do not feed the chicks. However, the male does provide water to the young by soaking his belly feathers with water and flying back to the nest. Chicks are able to fly after four or five weeks.

SANDGROUSE AND PEOPLE

Sandgrouse are sometimes hunted for food, usually at their watering holes.

CONSERVATION STATUS

No sandgrouse species are considered threatened at this time. However, hunting has affected some populations.



NAMAQUA SANDGROUSE

Pterocles namaqua

SPECIES ACCOUNTS

Physical characteristics: Namaqua sandgrouse are medium-sized sandgrouse that vary between 9.4 and 11 inches (24 to 28 centimeters) in length and 5 and 8.5 ounces (143 to 240 grams) in weight. The male has a yellow-olive head and breast, a maroon and white band across the breast, a brown belly, and a brown back spotted with pearl-gray. The female has brown and cream bars on most of its body, with streaks on the head and neck.

Geographic range: Namaqua sandgrouse are found in southern Africa, including southwestern Angola, Namibia, Botswana, and western South Africa.



Namaqua sandgrouse usually drink water in the first few hours after sunrise. Some individuals drink only once every three to five days. (© M.P. Kahl/Photo Researchers, Inc. Reproduced by permission.)

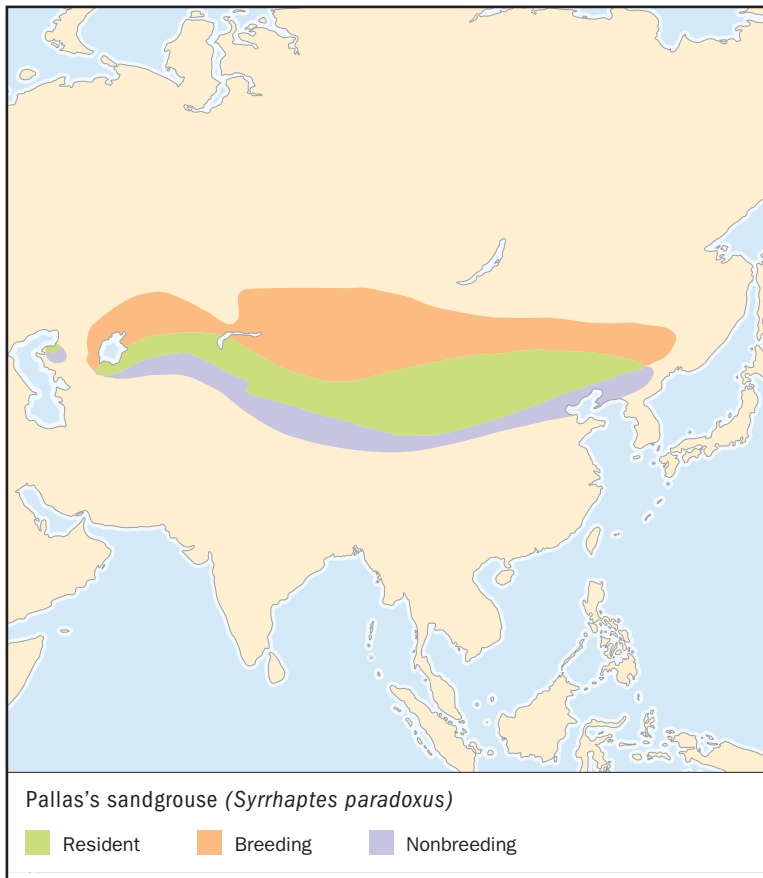
Habitat: Namaqua sandgrouse occupy stony desert regions marked by low shrubs, as well as sandy deserts with scattered bits of grass.

Diet: Namaqua sandgrouse eat small seeds from the ground. They also drink water, usually in the first few hours after sunrise. Some individuals drink only once every three to five days.

Behavior and reproduction: Namaqua sandgrouse form large flocks of hundreds or thousands of birds. They call to each other while flying, and can reach speeds of up to 45 miles per hour (70 kilometers per hour). Namaqua sandgrouse build their nests on open ground by scraping in the soil and lining the shallow depression with pebbles and dry vegetation. Three eggs are laid by the female. The female incubates the eggs during the day. The male incubates at night. Eggs hatch after about three weeks, and chicks are able to leave the nest after twenty-four hours. However, they are dependent on the male parent for water for two to three weeks, until they are able to fly to the watering hole themselves.

Namaqua sandgrouse and people: Namaqua sandgrouse are hunted for both food and sport.

Conservation status: Namaqua sandgrouse are not considered threatened at this time. ■



PALLAS'S SANDGROUSE

Syrrhaptes paradoxus

Physical characteristics: Pallas's sandgrouse are medium-sized sandgrouse that range from 15 to 16 inches (38 to 40.6 centimeters) in length and from 7.1 to 10.6 ounces (200 to 300 grams) in weight. Males are slightly larger than females. Males have orange backs barred with black, tawny necks, gray breasts, and black bellies. Females have barred backs and black bellies. The legs and the feet are feathered.

Geographic range: Pallas's sandgrouse are found in southern Russia, Tibet, Mongolia, and China. Some populations occasionally appear in Europe.



Most Pallas's sandgrouse populations stay in the same place throughout the year, or move short distances, but some populations migrate large distances from breeding to wintering grounds. (Illustration by Emily Damstra. Reproduced by permission.)

Habitat: Pallas's sandgrouse occupy steppe, a semiarid grass-covered plain, and sandy desert habitats, often with a scrub covering. They are generally found between 4,300 and 10,500 feet (1,300 to 3,200 meters) during the summer, but may occupy lower elevations during the winter.

Diet: Pallas's sandgrouse eat primarily legume seeds. Sometimes individuals also eat the green shoots of plants.

Behavior and reproduction: Pallas's sandgrouse are found in large flocks during the nonbreeding season. Most populations stay in the same place throughout the year, or move short distances, but some populations migrate large distances from breeding to wintering grounds. The wings of Pallas's sandgrouse whistle during flight. Individuals generally fly to water sometime during the morning hours. The breeding season is usually between April and June. Nests are scraped in the ground either near vegetation or out in the open. Eggs hatch after twenty-two to twenty-six days. The reproductive behavior of this species has not been studied in the wild. In captivity, only the female incubates while the male remains close by.

Pallas's sandgrouse and people: This species may occasionally be hunted for food.

Conservation status: Pallas's sandgrouse are not considered threatened at this time. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 4, *Sandgrouse to Cuckoos*. Barcelona: Lynx Edicions, 1997.

Johnsgard, P. A. *Bustards, Hemipodes and Sandgrouse: Birds of Dry Places*. Oxford, U.K.: Oxford University Press, 1991.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Pteroclididae (Sandgrouse)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=70> (accessed on June 11, 2004).

PIGEONS, DOVES, AND DODOS

Columbiformes

Class: Aves

Order: Columbiformes

Number of families: 2 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

Species of the order Columbiformes include the pigeons and doves, which are compact birds with broad, rounded, powerful wings; short bills; short legs; and short necks. They range in size from the tiny 1.1-ounce (30-gram) Australian diamond dove to the large Victoria-crowned pigeon, which can weigh as much as 6.6 pounds (3 kilograms). Males tend to be slightly larger than females in size. In most species, males and females are similarly colored, although there are a few tropical species where males are much more colorful than females. Many pigeon and dove species are gray, brown, or cream in color. However, some tropical species may be green, red, purple, pink, blue, or orange. One particularly colorful species is the golden dove of Fiji, which can be brilliant orange or a metallic green and gold.

The extinct dodos were large, flightless species weighing as much as 62 pounds (28 kilograms). They had large bellies; short, strong legs; and large bills. They had tiny wings and short tails. They were probably blue or brownish gray in color.

GEOGRAPHIC RANGE

Pigeons and doves are found worldwide, except in the Arctic and Antarctic regions and at high elevations. Particularly large numbers of species are found in tropical areas, especially those near the Indian Ocean and Pacific Ocean. About 60 percent of pigeons and doves are found on small islands far from continental land masses. Dodos were previously found on several small islands in the Indian Ocean.

HABITAT

Pigeons and doves occupy many habitat types, although most species live in forests. Most pigeons and doves are arboreal, they live in trees. A few tropical pigeons and doves are terrestrial, ground-dwelling, and some occupy cliff faces. Dodos inhabited forests as well.

DIET

Most species of pigeons and doves eat primarily seeds, fruits, and leaves. Some also eat invertebrates, animals without backbones, such as insects, though they generally do not form a large part of the diet. One exception is the atoll fruit-dove, which eats large numbers of insects as well as small vertebrates, animals with backbones, such as lizards. Pigeons are also able to drink water by sucking it up directly. Dodos ate fruit, seeds, and other vegetable matter.

BEHAVIOR AND REPRODUCTION

Some pigeons and doves are solitary, with individuals living alone. The majority of species, however, form small or large flocks, and many even breed together in large colonies. Pigeons and doves often gather near food sources. For example, as many as 100,000 wood pigeons have been observed in a grain field in Germany. During the breeding season, the South American eared dove regularly gathers in flocks of as many as five million individuals. The North America passenger pigeon, which is now extinct, may once have been the most abundant bird on earth. Flocks of passenger pigeons could include as many as billions of individuals.

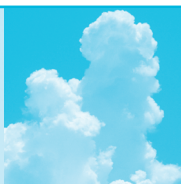
Most pigeons and doves make noises that sound like “coos” and “oohs.” Other species can make whistles, grunts, or clicks. A number of species are almost completely silent.

Courtship in pigeons and doves involves bowing, stretching, and flying. Pigeons and doves are monogamous, a single male mates with a single female during the breeding season. However, the same mate is not necessarily kept from one breeding season to the next. Arboreal species build a simple nest of twigs, while terrestrial species scrape a small depression on the ground. The female lays one or two eggs at a time in most species,



ESCAPING PREDATORS

Birds of the order Columbiformes have an unusual strategy for escaping predators. Their feathers are only loosely attached to the skin and fall out very easily. When a predator grabs a pigeon or dove, a large number of feathers are shed at once, leaving the predator with a mouthful of feathers while the bird quickly escapes.



CROP MILK

Pigeons and doves are unique among birds in that adults produce a special “crop milk” to feed their young. Crop milk is named after the crop, a pouch-like organ in the adult throat where the milk is produced. Crop milk is a soft, nutritious, cheesy substance. Because of crop milk, pigeon and dove parents are able to feed their young even when there is little food available, as long as they themselves are fat and healthy. Crop milk is produced by both parents.

although some species may lay as many as four. Species that breed in large colonies, or large pigeons and doves in rainforest habitats, tend to produce only one egg during the breeding season. The eggs are usually white in color, though some species have cream or brownish eggs. Pigeon chicks, which are sometimes called “squabs,” are helpless at birth, and have only a few feathers. Both parents help feed and take care of the young. Pigeons and doves are unique among birds in that adults produce a cheesy secretion in their crops known as “crop milk” which they feed to their young. This means that even when food is scarce, parents are able to feed the young. Chicks grow very quickly, and are able to leave the nest between seven and twenty-eight days after hatching. Some leave the nest before their wing feathers are fully grown. Chicks tend to have brown feathers, and only gradually take on the adult coloration.

PIGEONS, DOVES, DODOS, AND PEOPLE

Pigeons have long been raised and bred by human beings for food or as pets. Some species have also been trained to transport written messages. Dodos were hunted for food and sport until they became extinct. The passenger pigeon also went extinct due to human hunting.

CONSERVATION STATUS

About one-third of the 316 existing pigeons and doves are believed to be threatened. Many of these species occupy small islands and have very small ranges. Some species have already been driven to extinction by human activity, including the passenger pigeon and the dodo.

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 4, *Sandgrouse to Cuckoos*. Barcelona: Lynx Edicions, 1997.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

“Columbidae (Pigeons and Doves).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=71> (accessed on June 12, 2004).

“Order Columbiformes (Doves and Pigeons).” The University of Michigan Museum of Zoology Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Columbiformes.html#Columbiformes> (accessed on June 12, 2004).

PIGEONS AND DOVES

Columbidae

Class: Aves

Order: Columbiformes

Family: Columbidae

Number of species: 316 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Pigeons and doves vary in size from 5.9 to 31.5 inches (15 to 120 centimeters) in length and from 1.1 to 4.4 pounds (0.5 to 2 kilograms) in weight. They have compact bodies, short necks, and small heads. The wings are long and broad and the tail is long and either broad or pointed. The bill is short. The eyes are surrounded by an area of bare skin. Males and females are usually similarly colored, although males are often somewhat larger in size. Many species are gray, brown, or cream in color although some tropical species are much brighter.

GEOGRAPHIC RANGE

Pigeons and doves are found worldwide except in the Arctic and Antarctica. There are particularly large numbers of species in Asia, especially Southeast Asia, including on the many islands in that part of the world.

HABITAT

Pigeons and doves occupy a wide variety of habitat types, including desert, grassland, and forest. The largest number of species is found in forested areas, particularly rainforest. Most pigeons and doves are arboreal, which means they live in trees. This includes most species that occupy grassland areas. Rainforest species may be arboreal or terrestrial, ground-dwelling. Some European and Asian pigeons nest in mountainous cliffs at high altitudes. Desert species are found in California and Australia.

DIET

Some pigeons and doves, including tropical fruit doves, are exclusively frugivorous, fruit-eating. Most species swallow fruit whole. After the flesh of the fruit is digested in the stomach, the pit is regurgitated, vomited from the stomach. Other pigeons and doves are granivorous, eating primarily grains and seeds. Seeds are typically picked from the surface of the ground or stripped from the stems of grasses. One species, the Galápagos dove, is known to use its curved bill to dig for hard seeds in the ground. Granivorous doves and pigeons may also eat leaves, stems, buds, and flowers when seeds are unavailable. A few pigeon and dove species eat primarily animal matter. This includes the atoll fruit dove of the Toamotu archipelago in the Pacific Ocean, which eats insects and small vertebrates, animals with backbones, such as lizards, and the Wonga pigeon of Australia, which eats insects and other invertebrates, animals without backbones. Pigeons and doves are also able to drink water by putting their bills underwater and sucking, an ability that is unusual in birds.

BEHAVIOR AND REPRODUCTION

Many species of pigeons and doves form large or small flocks for feeding and other activities. Within flocks, there are dominant and subordinate individuals. The dominant birds, which tend to be larger in size, are usually found in the center of flocks. The smaller, subordinate birds are closer to the edge.

Most species of pigeons and doves are monogamous (muh-NAH-guh-mus), a single male breeds with a single female during the breeding season. Courtship, behaviors that lead to mating, in many species involve flight displays. For example, male wood pigeons fly several feet upwards, clap their wings nine times, and then glide. Flight displays are not found in forest or terrestrial species, however. In most pigeons and doves, males perform a “bow-coo” display involving cooing and bowing just before mating. Each pigeon and dove species has a unique “bow-coo” display.



CONSEQUENCES OF AN ALL-FRUIT DIET

Fruit doves eat only fruit. This is an unusual diet among pigeons and doves, and among birds in general, because fruit contains very little protein compared to seeds and insects. Because of their low-protein diet, fruit doves lay only one egg at a time, rather than two like most other pigeons and doves. Also, fruit doves feed their chicks crop milk throughout the nestling period. In other pigeons and doves, adults feed young crop milk for a few days and then gradually replace it with other foods.

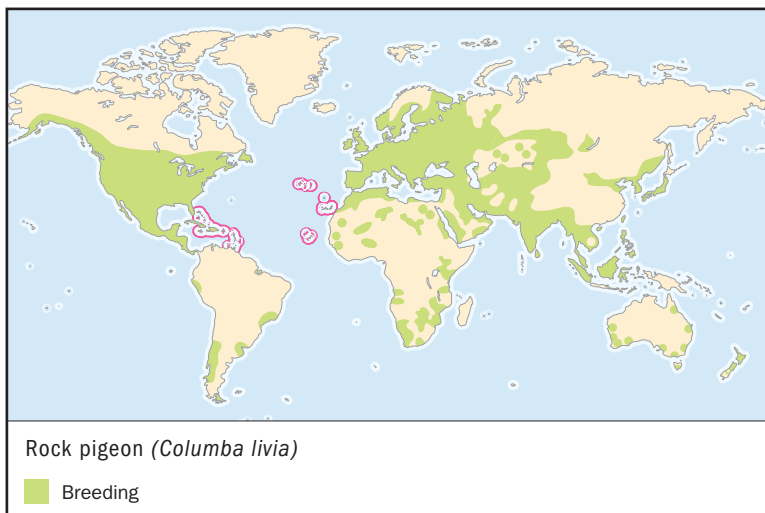
Pigeons build a simple nest of sticks, straw, and other material. The male collects nesting material and passes it to the female, who tucks it around her body. Pairs are territorial and defend their nesting areas from other members of the species. In fights over territory, individuals peck at each other's heads, particularly at the skin around the eye, and beat their wings. In most species, the female lays two eggs at a time. In a few species, only one egg is laid. In many species, both parents share incubation duties, with males incubating, sitting on the nest, from morning to afternoon, and females incubating from the afternoon to the next morning. Eggs hatch after eleven to thirty days. The young are altricial (al-TRISH-uhl), they hatch at an early developmental stage, blind and with few or no feathers. For the first few days, pigeons and doves feed their young crop milk, a fatty substance produced in the crop organs, located in the throat. Both parents produce crop milk. Chicks are able to leave the nest between seven and twenty-eight days after hatching.

PIGEONS, DOVES, AND PEOPLE

Humans have hunted and raised pigeons for food, as pets, and even to transport written messages.

CONSERVATION STATUS

A third of the 316 existing pigeon and dove species are believed to be Threatened by the World Conservation Union (IUCN). Many of these species occupy small oceanic islands and have very limited ranges. The passenger pigeon, once found in North America in flocks of millions, was driven to extinction by human hunting.



ROCK PIGEON

Columba livia

SPECIES ACCOUNTS

Physical characteristics: Rock pigeons are blue-gray in color, with short tails and long, strong wings.

Geographic range: Rock pigeons are found worldwide.

Habitat: Rock pigeons breed in cliff areas or on human buildings. They occupy diverse areas including deserts and grasslands, as well as urban settings.

Diet: Rock pigeons eat grains and seeds.

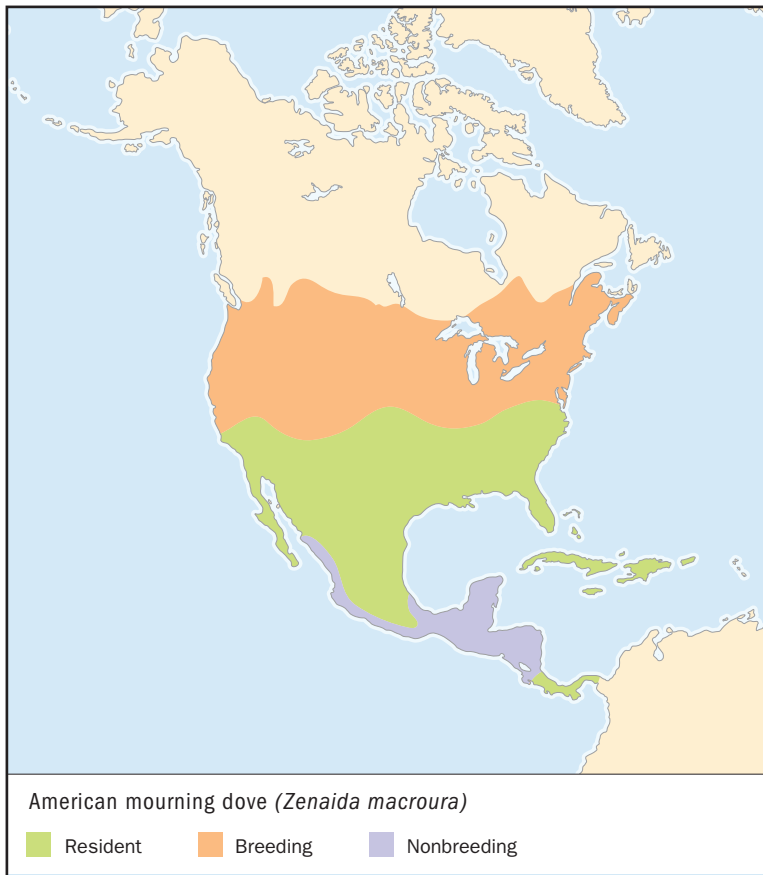
Behavior and reproduction: Rock pigeons are strong fliers. They generally begin to roost before the sun goes down and wake at dawn. Rock pigeons do not sleep in trees but use a wide variety of crevices, including spaces under rooftops. Rock pigeons are extremely curious birds who investigate their surroundings carefully.

Courtship in rock pigeons involves both partners using their bills to preen, or smooth, their back feathers. Females may stick their bills in the male's bill during courtship, the way young pigeons do when they feed. Both partners then preen each other's heads and necks. The female lays two eggs at a time. Chicks hatch after seventeen or

eighteen days. Young are fed crop milk and, later, seeds. Chicks are able to fly after four to five weeks.

Rock pigeons and people: The rock pigeon has been domesticated, tamed, several times, in several different places, by humans. The first domestication may have occurred as long as 10,000 years ago. Rock pigeons have been trained to carry messages. In urban settings, they may be a health hazard to humans since many pigeons carry disease and parasites such as mites and ticks.

Conservation status: Interbreeding with domesticated rock pigeons that have returned to the wild threatens the species, because their young then carry genes from the domesticated varieties, which are usually bred by humans. ■



AMERICAN MOURNING DOVE

Zenaida macroura

Physical characteristics: American mourning doves have olive-gray backs and brownish gray bellies. Their necks are an iridescent pink and purple.

Geographic range: American mourning doves are found in North America and Central America.

Habitat: American mourning doves are found in grassland areas, in hot, dry areas, and sometimes on agricultural lands.

Diet: American mourning doves eat primarily seeds.



*American mourning doves get their name from the mournful, sad, call that they make.
(C. C. Lockwood/Bruce Coleman Inc. Reproduced by permission.)*

Behavior and reproduction: In American mourning doves, males court females by standing behind them and cooing. Males also inflate their crop, showing off the colors of their throat. Males do not bow. At the nest site, males continue to call while spreading their tails in order to show off their white feather tips.

American mourning doves and people: American mourning doves are hunted for sport and food in the United States and Mexico.

Conservation status: American mourning doves are not threatened. ■



LUZON BLEEDING HEART

Gallicolumba luzonica

Physical characteristics: Luzon bleeding hearts have blue gray backs and white bellies. There is a bright, red-orange spot on the breast which gives this species its name.

Geographic range: Luzon bleeding hearts are found in the Philippines.

Habitat: Luzon bleeding hearts inhabit Philippine rainforest areas.

Diet: Luzon bleeding hearts eat seeds, berries, and invertebrates. This species feeds on the forest floor.



Luzon bleeding hearts fluff their feathers to conserve body heat. Their name comes from the bright spot on their breast. (© Tom McHugh/Photo Researchers, Inc. Reproduced by permission.)

Behavior and reproduction: The Luzon bleeding heart male starts the courtship by chasing the female across the forest floor. Males then stop, raise their tails, puff their feathers, lower their heads, and arch their wings. Then they throw back their heads and stick out their breast to show off the bright red breast spot. Males then bow and coo. Little else is known about Luzon bleeding heart reproductive biology and behavior.

Luzon bleeding heart and people: No significant interaction between Luzon bleeding hearts and humans is known.

Conservation status: Luzon bleeding hearts are not threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 4, *Sandgrouse to Cuckoos*. Barcelona: Lynx Edicions, 1997.

Gibbs, D., E. Barnes, and J. Cox. *Pigeons and Doves. A Guide to the Pigeons and Doves of the World*. Sussex, U.K.: Pica Press, 2001.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

"Columbidae (Pigeons and Doves)." The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=71> (accessed on June 10, 2004).

"Order Columbiformes (Doves and Pigeons)." Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Columbiformes.html#Columbiformes> (accessed on June 10, 2004).

family CHAPTER

DODOS AND SOLITAIRES

Raphidae

Class: Aves

Order: Columbiformes

Family: Raphidae

Number of species: 3 species;
all extinct

PHYSICAL CHARACTERISTICS

Dodos and solitaires were about 40 inches (100 centimeters) long and probably weighed between 24 and 40 pounds (10.5 to 17.5 kilograms). However there are some accounts of birds that may have weighed as much as 50 pounds (22.5 kilograms). Dodos were heavily built, with tiny, non-functional wings, strong legs and feet, and a large, strong hooked bill. Dodos had bare faces without feathers. The rest of the body was covered by bluish or brownish gray feathers. Rodrigues solitaires were somewhat taller and more slender than the dodo. Their heads and bills were smaller. They were brownish in color. Males were significantly larger than females. Very little is known of the physical appearance of the third species in the family, the Réunion solitaire. In fact, accounts are so vague that it is not certain they describe a member of this family at all.

GEOGRAPHIC RANGE

Dodos and solitaires are Extinct, no longer existing, but were once found on the Mascarene Islands of Mauritius, Rodrigues, and perhaps Réunion in the Indian Ocean.

HABITAT

Dodos and solitaires inhabited woodland areas.

DIET

Dodos were described as eating fruit primarily. The Rodrigues solitaire was described as eating seeds, fruit, and leaves.

phylum

class

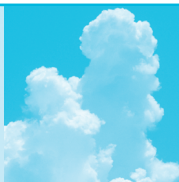
subclass

order

monotypic order

suborder

▲ family



GIGANTISM AND FLIGHTLESSNESS

Dodos and solitaires were close relatives of the pigeons and doves. Unlike existing pigeons and doves, however, they were unable to fly. They were also much larger in size. These features of flightlessness and gigantism (jie-GAN-tiz-um) likely evolved because their island habitats included no predators. In fact, flightlessness and gigantism have evolved in many other island birds. Unfortunately for dodos and solitaires, flightlessness was an extreme disadvantage when humans and other predators reached the Mascarene Islands.

Both dodos and Rodrigues solitaires had an annual fat cycle during which they were fat for several months and thin the rest of the year. In the Rodrigues solitaire, individuals were fat from March to September and then thin. It was reported by one observer that two Rodrigues solitaire chicks had a fat layer 1 inch (2.5 centimeters) thick over the entire body. This fat cycle is common in many bird species of the Mascarene islands.

BEHAVIOR AND REPRODUCTION

Dodos were unable to fly, but could run quickly. They were not afraid of humans. When caught, however, a dodo screamed, causing other dodos to rush to its aid. These dodos were then caught as well. Rodrigues solitaires were territorial, pairs defended territories from other individuals of the species. Rodrigues solitaires had a courtship ritual that involved making noises with the wings. Their wing spurs were used in aggressive encounters between individual birds.

Little is known of the reproductive biology of dodos. It is likely that species built their nests on the ground, and that females laid only one egg at a time. The young were very likely altricial, hatched at an early developmental stage, blind and with few or no feathers. In the Rodrigues solitaire, nests were built from palm leaves. They were generally built on the ground. Both male and female helped incubate, or sit on, the eggs. Chicks were cared for by their parents for some time, then joined crèches, large groups of chicks.

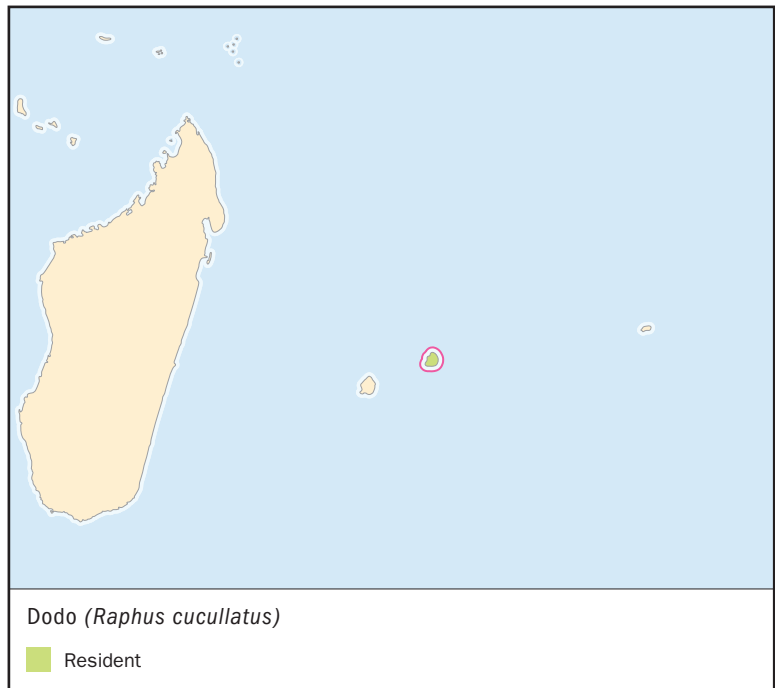
DODOS, SOLITAIRES, AND PEOPLE

Dodos and solitaires were driven to extinction by human hunting. They were frequently killed for food, particularly by sailors visiting the islands they once inhabited. They also suffered from the introduction of non-native species such as pigs, cats, and rats by humans. Some dodos and solitaires were brought to Europe where they were associated with exotic islands. Because dodos were so quickly hunted to extinction, they continue to serve as symbols of extinction.

CONSERVATION STATUS

The dodo and the two species of solitaires are Extinct, due to human hunting and to the introduction of non-native species such as cats, rats, and pigs.

SPECIES ACCOUNT



DODO *Raphus cucullatus*

Physical characteristics: Dodos were large birds about the size of a turkey. They had dark gray feathers on the back and somewhat lighter gray feathers on the belly. The wings were tiny and yellowish white in color. The tail was small and short, made up of five curled feathers. Dodos had large, yellow hooked bills. The face was featherless, with gray skin.

Geographic range: Dodos were found on the island of Mauritius in the Indian Ocean, about 500 miles (800 kilometers) east of Madagascar.

Habitat: The dodo inhabited woodland areas.

Diet: Dodos ate fruit. They also swallowed small stones to help with digesting food in the crop, an organ found near the throat.

Behavior and reproduction: Dodos could not fly, but were able to run quickly. When a dodo was caught, it would scream and other

dodos would rush to the site, getting caught themselves. One sailor described dodos as “serene and majestic” and said that they did not run away from humans.

Dodos built nests on the ground. Only one egg was laid at a time. Judging by their size, eggs probably hatched after about thirty-seven days.

Dodos and people: Sailors traveling in the Indian Ocean caught dodos in large numbers for food. The dodo is the first recorded species that was driven to extinction by human activity.

Conservation status: The dodo is Extinct. Not only did sailors eat the dodos, but the pigs, cats, and monkeys brought to Mauritius by sailors ate large numbers of dodo eggs. ■



FOR MORE INFORMATION

Books:

del Hoyo, J., A. Elliott, and J. Sargatal, eds. *Handbook of the Birds of the World*. Vol. 4, *Sandgrouse to Cuckoos*. Barcelona: Lynx Edicions, 1997.

Hachisuka, M. *The Dodo and Kindred Birds, or the Extinct Birds of the Mascarene Islands*. London: Witherby, 1953.

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Quammen, D. *The Song of the Dodo: Island Biogeography in an Age of Extinctions*. New York: Scriber, 1996.

Web sites:

“Family Raphidae (Dodo and Solitaires).” Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Raphidae.html#Raphidae> (accessed on June 12, 2004).

Because dodos could not fly, they were easy to hunt. When a dodo was caught, it would scream and other dodos would rush to the site, getting caught themselves. (Illustration by Gillian Harris. Reproduced by permission.)

PARROTS

Psittaciformes

Class: Aves

Order: Psittaciformes

One family: Psittacidae

Number of species: 353 species



monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

The family Psittacidae contains more than 300 species of birds. Parrots usually have brightly colored plumage (feathers). Most have green feathers, and many parrots are blue, red, and yellow. The parrots range in length from the 3.5-inch (9-centimeter) red-breasted pygmy parrot to the 3.3-foot (1-meter) hyacinth macaw.

Parrots have large heads, short necks, and curved beaks. They use their hooked beaks to crack nuts and grab branches. Birds use their beaks and feet to pick up food and carry it their mouths. Parrots have zygodactyl (zye-guh-DACK-tuhl) feet; two toes on each foot face forward and two face backward.

GEOGRAPHIC RANGE

Most parrots live in the Southern Hemisphere, the portion of Earth south of the equator. This range includes the continents of South America, Australia, and Africa. Parrots also live in Central American countries including Belize, as well as countries including Mexico, New Zealand, New Guinea, India, and Afghanistan.

HABITAT

Parrots are tree-dwellers that live in various habitats. They live in rainforests where heavy rainfall throughout the year produces an abundance of trees and plants. In deciduous forests, parrots live in trees that shed leaves. Parrots also nest in coniferous forests where evergreen trees don't shed leaves. Some birds also live in grasslands, where there are few trees.

DIET

Parrots eat seeds and fruit. Lorikeets also eat pollen and nectar. The amount eaten varies with the bird's size.

BEHAVIOR AND REPRODUCTION

Parrot behavior varies by species. A group of birds may form a flock. Birds in the flock often pair up. Some parrots are active in the day and sleep in trees at night. Other birds are nocturnal, active at night.

Most parrots are monogamous (muh-NAH-guh-mus) and pair up for life. Birds often breed in cavities, nests located in the hollow part of trees. Usually, only the female broods, staying with the eggs until they hatch. Females of most species lay four to eight white eggs. They hatch in eighteen to twenty days.

Parrots are thought to be intelligent. In the wild, they screech or scream to warn the flock of danger from predators like eagles and falcons.

Cage birds (birds in captivity) often imitate the words of the people they live with, and some tamed parrots live to age of eighty or longer.

PARROTS AND PEOPLE

Parrots have been popular as cage birds since ancient times. While there is still a demand for parrots as pets, birds in the wild are sometimes considered pests because flocks of birds may ruin crops.

CONSERVATION STATUS

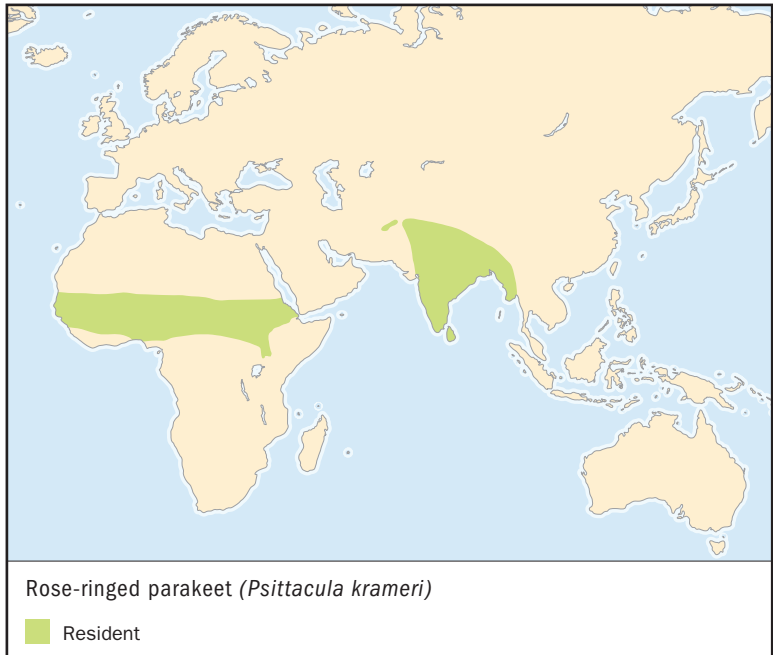
About one-third of parrot species face danger of extinction, with species dying out as habitat is lost because of human development. Extinct species include the Carolina parakeet, the only parrot that lived naturally in the United States.



WHY PARROTS TALK

The gray parrot is the most talkative bird in the parrot family. These domesticated parrots are intelligent. They imitate sounds, something that usually doesn't happen in the wild where birds chatter with other parrots. Scientists believe that cage birds repeat human words when kept without other parrots as companions.

SPECIES ACCOUNTS



ROSE-RINGED PARAKEET *Psittacula krameri*

Physical characteristics: The rose-ringed parakeet has green feathers, black feet, and a red beak with a black band around it. The rose ring is the black-and-red collar around the bird's neck. Birds measure 15.7 inches (40 centimeters) from their heads to their tails. They weigh from 4.1 to 4.9 ounces (116 to 139 grams).

Geographic range: Rose-ringed parakeets live naturally in the African countries of Sudan, Mauritania, Uganda, Eritrea, Ethiopia, and Somalia. In Asia, they range in India, Sri Lanka, Pakistan, Myanmar, and China. Parakeets have been introduced into countries including the United States and England.

Habitat: Rose-ringed parakeets are adaptive, able to adjust to living conditions in a range of countries. They live in deciduous forests, grassland, and rainforests. In addition to their natural habitats, parakeet populations grew in the United States and England after caged birds escaped or were released by people.

Diet: Parakeets eat seeds, grain, flowers, fruit, nectar, and berries.

Behavior and reproduction: Rose-ringed parakeets are semi-nomadic, traveling to find food. They usually travel in a small flock, but some food sources can attract a flock of thousands of birds.

Parakeets are monogamous. The female selects the nest location and lines it with wood chips. The nest may be in a hole in a tree or one in a house wall. The hen lays a clutch of three to four eggs. They hatch in twenty-two days and are cared for by both parents.

Rose-ringed parakeets and people: Rose-ringed parakeets are valued as cage birds. In the wild, they are sometimes considered pests because they destroy crops while trying to feed.

Conservation status: Rose-ringed parakeets are not in danger of extinction. ■



The rose-ringed parakeet gets its name from the black-and-red collar around its neck. (Illustration by Joseph E. Trumpey. Reproduced by permission.)



ECLECTUS PARROT

Eclectus roratus

Physical characteristics: The coloring of male and female eclectus parrots is so different that they were once thought to be two different species. The female bird has red and blue feathers and a black bill. The male has green plumage and a yellow bill. All eclectus parrots have feathers of a smooth texture that have been compared to silk. The birds are 16.5 inches (42 centimeters) in length and weigh 0.9 to 1.2 pounds (440 to 660 grams).

Geographic range: Eclectus parrots live in Indonesia in Moluccas, Sumba Island, the Tanimbar Islands, Aru Islands, Biak Island, and Irian Jaya. They also range in the South Pacific in New Guinea and



The coloring of male and female eclectus parrots is so different that they were once thought to be two different species. The female bird has red and blue feathers and a black bill. The male has green plumage and a yellow bill. (Illustration by Joseph E. Trumpey. Reproduced by permission.)

nearby islands, the Solomon Islands, Admiralty Islands, Bismarck Archipelago, and the Cape York Peninsula in Australia.

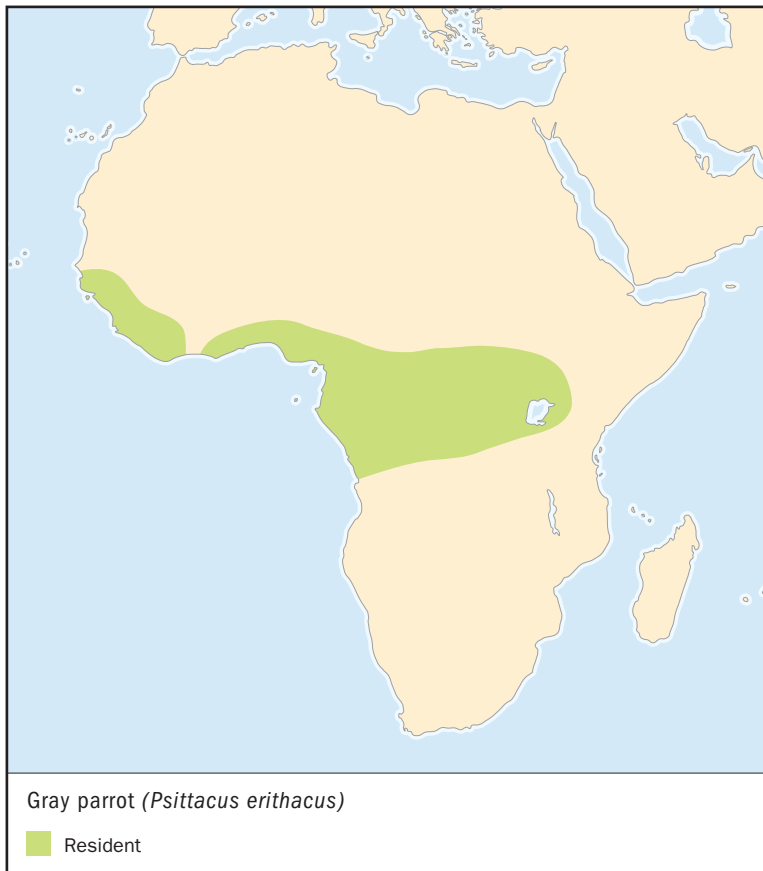
Habitat: In the rainforest, eclectus parrots often live in tall trees with nests located 72 feet (22 meters) or more from the ground. The birds also live in trees in grassland.

Diet: Eclectus parrots eat nuts, seeds, fruits, berries, and nectar.

Behavior and reproduction: Eclectus parrots are monogamous and are believed to breed year-round. However, they are thought to mate mostly between August and January. Birds are group-oriented, and there may be four nests in a tree. The parrots are cooperative breeders, parents are helped by other birds. The assistants are thought to be offspring or adult relatives of the expectant parents. The female has a clutch of two eggs that hatch in twenty-six days.

Eclectus parrots and people: Eclectus parrots are popular cage birds. While people in their native lands sometimes keep them as pets, some people are upset when wild parrots steal their fruit.

Conservation status: Due to concern that populations will decline, a permit is required to remove eclectus parrots from their natural habitat. A CITES (Convention on International Trade in Endangered Species in Wild Fauna and Flora) permit is needed to import the parrots. ■



GRAY PARROT

Psittacus erithacus

Physical characteristics: The African gray parrot's plumage consists of various shades of gray. Tail feathers are red. Birds are 13 inches (33 centimeters) from head to tail and weigh up to 0.8 pounds (407 grams).

Geographic range: Gray parrots are found in western Africa in coastal countries including Sierra Leone, Ghana, and the Ivory Coast. Birds also range inland in central and east Africa.

Habitat: Parrots make their nests in tree holes, sometimes choosing locations abandoned by birds like woodpeckers. The parrots live in evergreen forests and other wooded areas.

The African gray parrot is a popular pet because it can learn many words. Populations are declining in some areas because smugglers steal birds to sell them, and their habitats are destroyed. (Daniel Zupanc/Bruce Coleman Inc. Reproduced by permission.)



Diet: Parrots eat seeds, fruit, nuts, and berries. Birds usually pick their food from the trees. They sometimes land on the ground and eat dirt or tiny rocks. This helps the parrots digest their food.

Behavior and reproduction: Gray parrots are social birds. They travel during the day in pairs or small groups. At dusk, a large group of birds meets at one spot. This large flock will chatter and then roost, resting for the night. When the sun rises, pairs and groups fly away to eat. Birds often take a midday break and then feed again.

Gray parrots are monogamous. When they breed is based on where the birds are. Parrots in western Africa breed from November to April. The breeding season in eastern Africa is during June and July. In the Congo River basin, birds breed from July through December.

The female lays two to three eggs. Sometimes there is a clutch of four eggs. In the wild, eggs hatch in twenty-one days. The incubation period for cage birds is thirty days.

Gray parrots and people: The gray is an extremely popular cage bird because it can learn many words.

Conservation status: Populations are declining in some areas as smugglers steal birds and habitats are destroyed, but the gray parrot is not currently in danger of extinction. ■



SCARLET MACAW

Ara macao

Physical characteristics: Scarlet macaws are colorful birds. The macaw's head, tail, and much of its body is red. Wings are blue, green, and yellow. Birds measure 33 inches (85 centimeters) from head to tail. The tail accounts for most of the length. Macaws weigh from 2.1 to 2.2 pounds (1.06 to 1.12 kilograms).



The colorful scarlet macaw lives in southern Mexico, Central America, and northwestern South America. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

Geographic range: Scarlet macaws are found in southern Mexico and in Central American countries including Guatemala and Costa Rica. They also range in northwestern South American countries like Colombia, Ecuador, and Peru.

Habitat: Macaws live in evergreen, coniferous forests and other wooded areas like deciduous forests.

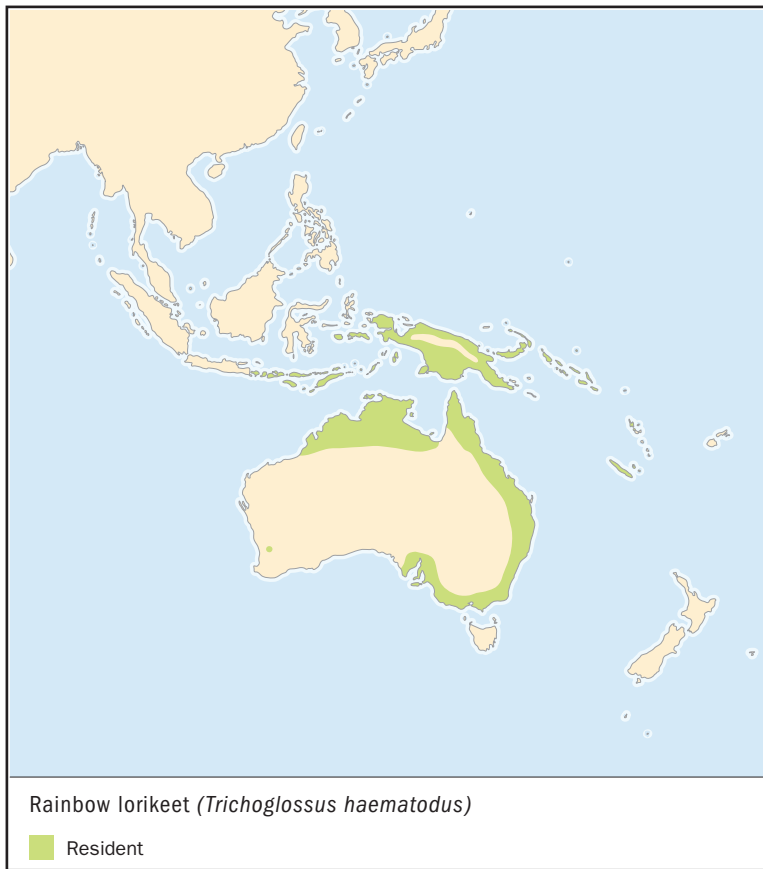
Diet: Macaws eat berries, seeds, fruit, nuts, and flowers. After eating, macaws join other birds at riverbanks. There the birds eat mineralized clay. Scientists think that birds do this to stop the effect of being poisoned by unripe fruit and other dangerous plants.

Behavior and reproduction: Macaws travel in pairs and fly close to each other. Pairs may be part of a family group or a flock of up to twenty birds. Birds look for food during the day and roost in trees at night.

Birds in the north nest in March and April. The season lasts from October through March in the south. Females usually lay one or two eggs. Sometimes there is a clutch of four eggs.

Scarlet macaws and people: While macaws screech to keep humans away, people want to own these colorful birds. Macaws are also hunted for food or for their feathers.

Conservation status: Scarlet macaw populations are declining as habitat is destroyed when trees are cut down. Smuggling also reduces the population. In 2003, poachers armed with guns followed biologists in a Guatemala reserve, an area set aside to protect species. The poachers stole macaw eggs, knowing there is a demand for the birds. ■



RAINBOW LORIKEET

Trichoglossus haematodus

Physical characteristics: The bird named for the rainbow has an orange beak and red, yellow, green, and blue feathers. Body color varies by location. Some birds have blue and purple heads and green feather collars around their necks. Lorikeets measure 10 inches (26 centimeters) from head to tail. The birds weigh from 3.5 to 5.8 ounces (100 to 167 grams).

Unlike other members of the parrot family, the lorikeet can't open seeds with its beak. The lorikeet has a pointed bill and a "brush-tipped" tongue. The brush is made of tiny hairs on the tongue. This allows the lorikeet to eat pollen and nectar.

Rainbow lorikeet pairs mate only with each other, and both help incubate their eggs. (© Gregory G. Dimijian/Photo Researchers, Inc. Reproduced by permission.)



Geographic range: Rainbow lorikeets live in Australia, New Guinea, Indonesia, and South Pacific islands including the Papuan Islands.

Habitat: Rainbow lorikeets live in wooded areas where flowers grow. Habitats include rainforests thick with trees, grasslands where there are few trees, and people's gardens.

Diet: Rainbow lorikeets use their brush-tipped tongues to get nectar, the liquid in flowers that bees turn into honey. The birds also eat pollen, which also comes from flowers. Birds also eat fruit, berries, grain, leaf buds, insect larvae (LAR-vee), and some seeds. They feed in the wild and from feeders in people's gardens.

Behavior and reproduction: The lorikeets travel in pairs, family groups, and flocks. Rainbows are monogamous and breed from October to January. The months when birds mate vary by region. Nests are built in a hollow tree limb where the female lays from two to three eggs. Both parents incubate the eggs until they hatch in about twenty-five days.

Rainbow lorikeets and people: Rainbow lorikeets are popular cage birds. However, in the wild they can damage crops because an abundant food source could attract hundreds of birds.

Conservation status: Rainbow lorikeets are not at risk of extinction. ■

FOR MORE INFORMATION

Books:

Freud, Arthur. *The Complete Parrot*. New York: Howell Book House, 1995.

Rauzon, Mark. *Parrots Around the World*. New York: Franklin Watts, 2001.

Wade, Nicholas, ed. *The New York Times Book of Birds*. New York: The Lyons Press, 2001.

Periodicals:

Greij, Eldon. "Bird Brain: Feats Performed by One African Grey Parrot Raise Questions About How Much All Birds Think." *Birder's World* 17, no. 6 (Dec 2003): 76.

"Maybe What Polly Wants is a New Toy." *Science News* 164, no. 5 (August 2, 2003): 78.

Myers, Jack. "Parrots That Eat Dirt: Why Do They Do It?" *Highlights for Children* 56, no. 12 (Dec 2001): 12.

Smith, Dottie. "Parrot Talk." *Fun For Kidz* 2, no. 2 (March–April 2003): 34.

Web sites:

Brightsmith, Don. "What Eats Parrots?" Duke University. <http://www.duke.edu/djb4> (accessed on April 23, 2004).

"Rainbow Lorikeets." San Francisco Zoo. <http://www.sfbay.org/cgi-bin/animals.py?ID=60> (accessed on April 26, 2004).

Triveldi, Brian. "Poachers and Fires Menace Endangered Parrots." NationalGeographic.com. http://www.nationalgeographic.com/news/2003/06/0609_tvmacaw.html (accessed on April 27, 2004).

TURACOS AND PLANTAIN EATERS

Musophagiformes

Class: Aves

Order: Musophagiformes

One family: Musophagidae

Number of species: 23 species

monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

These birds have long tails, short bills and short, round wings. They are weak fliers, but they can walk, run, and leap on tree twigs and branches. The birds move so well on their feet because they are able to bend their outer toes forward and backwards.

Seventeen Musophagidae species are very colorful. Turacos (TOOR-ah-koz) living in forests have blue, green, or purple plumage, with red in their wing feathers. The species living in grasslands are mainly gray and brown. The great blue turaco is the largest bird in this family. From head-to-tail, it measures 28 to 30 inches (70 to 76 centimeters). Other birds in the family range in length from 16 to 21 inches (40 to 53 centimeters).

GEOGRAPHIC RANGE

Turacos and plantain eaters are unique to Africa. They live in sub-Saharan Africa, the part of the continent below the Sahara Desert. The birds are found in the countries of Angola, Congo, Democratic Republic of the Congo, Tanzania, Zambia, Malawi, Mozambique, Namibia, Zimbabwe, Botswana, Guinea, Sierra Leone, Ivory Coast, Ghana, Nigeria, Cameroon, Central African Republic, Sudan, Kenya, Gabon, Uganda, Equatorial Guinea, Rwanda, and Burundi.

HABITAT

Members of the Musophagidae family are arboreal, meaning they live in trees. Their habitat ranges from tropical forests thick with trees to grasslands, where there are few trees.

DIET

Although “musophaga” means banana and plantain eater, These birds hardly ever eat bananas or the tropical bananas called plantains. Instead, the birds eat the fruits of trees including the parasol and waterberry. The birds eat fruit that grows wild as well as fruit grown by people. Some species also eat flowers, leaves, caterpillars, moths, snails, slugs, termites, and beetles.

BEHAVIOR AND REPRODUCTION

Birds live in pairs or in small family groups. Most species are thought to be monogamous (muh-NAH-guh-mus), mating for life. The birds build a flat nest of twigs, and both parents incubate (sit on) eggs. The female usually lays two eggs. Hens in the grassland have a clutch of two or three eggs. They hatch in twenty-two to thirty-one days, depending on the species.

Predators that hunt turacos and plantain eaters include eagles and chimpanzees.

MUSOPHAGIFORMES AND PEOPLE

For centuries, people hunted turacos for food and used their feathers for tribal headgear. Some turaco species are popular as cage birds. Hunters don't like the gray go-away-bird because they believe the bird's call warns animals of potential attacks.

CONSERVATION STATUS

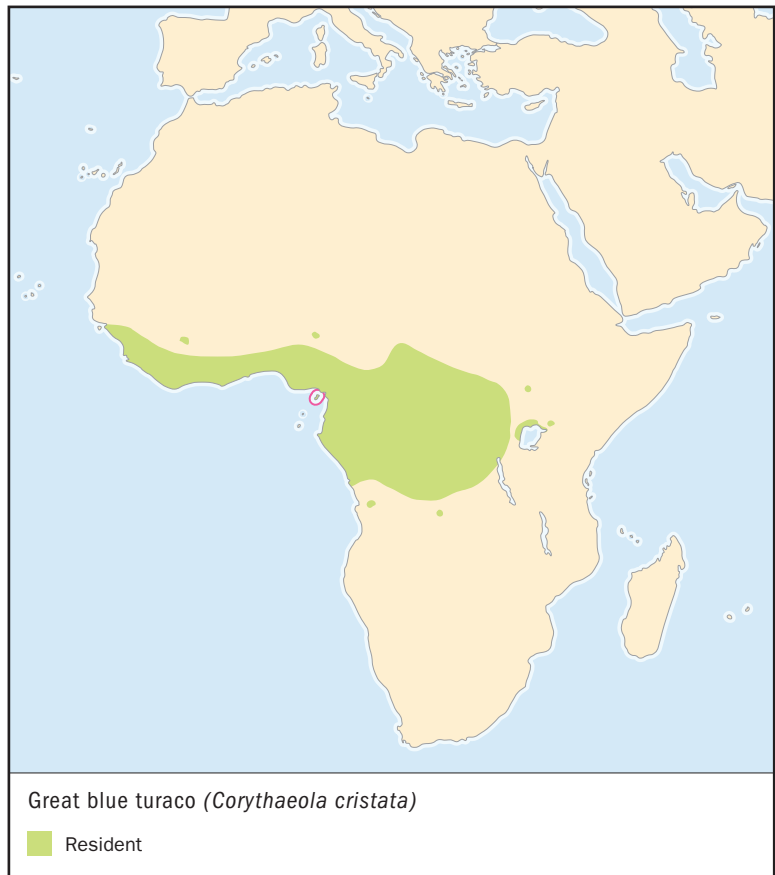
Three turaco species are threatened, according to the World Conservation Union (IUCN). One Cameroon species, Bannerman's turaco, is Endangered, facing a very high risk of extinction. Environmental groups are working with local people to save the birds threatened by loss of habitat.



TURACOS RECOGNIZE PREDATORS' CALLS

Great blue turacos can recognize the difference between the calls of other species, according to biologist Klaus Zuberbühler of St. Andrew's University in Scotland. His research showed that the great blue knew the calls of predators like eagles and chimpanzees. The fruit-eating birds also recognized the calls of other fruit-eaters like monkeys and hornbills.

SPECIES ACCOUNTS



GREAT BLUE TURACO *Corythaeola cristata*

Physical characteristics: The great blue turaco is regarded as one of the most beautiful birds in Africa. Its bill is yellow, with a red tip as if it's wearing lipstick. The bird's head is topped by a blue, almost black, crest. Plumage on the head, back, and wings is greenish blue. There is yellow on the chest and other areas including the tail, and red plumage above the feet.

The great blues are the largest members of their family. Males measure from 28 to 30 inches (70 to 76 centimeters) and weigh from 1.9 to 2.1 pounds (0.9 to 1 kilograms). Females weigh from 1.8 to 2.7 pounds (0.8 to 1.2 kilograms).

Geographic range: Great blue turacos live in Guinea, Sierra Leone, Ivory Coast, Ghana, Nigeria, Cameroon, Central African Republic, Sudan, Kenya, Gabon, Uganda, Equatorial Guinea, Rwanda, Democratic Republic of the Congo, and Burundi.

Habitat: Turacos spend most of their days in the canopies or tops of trees in Africa's forests.

Diet: Turacos mostly eat fruit, and they pluck it from trees or shrubs. When there is little fruit around, they eat leaves and flowers. Sometimes great blue turacos eat algae (AL-jee), tiny plants that grow in water.

Behavior and reproduction: Great blue turacos are sociable and form parties, groups of up to eighteen birds. A party stakes out a territory of its own. They communicate with two types of calls. One is a low tone that has been compared to a purr. The other is harsher, and sounds like the word "cow" being repeated.

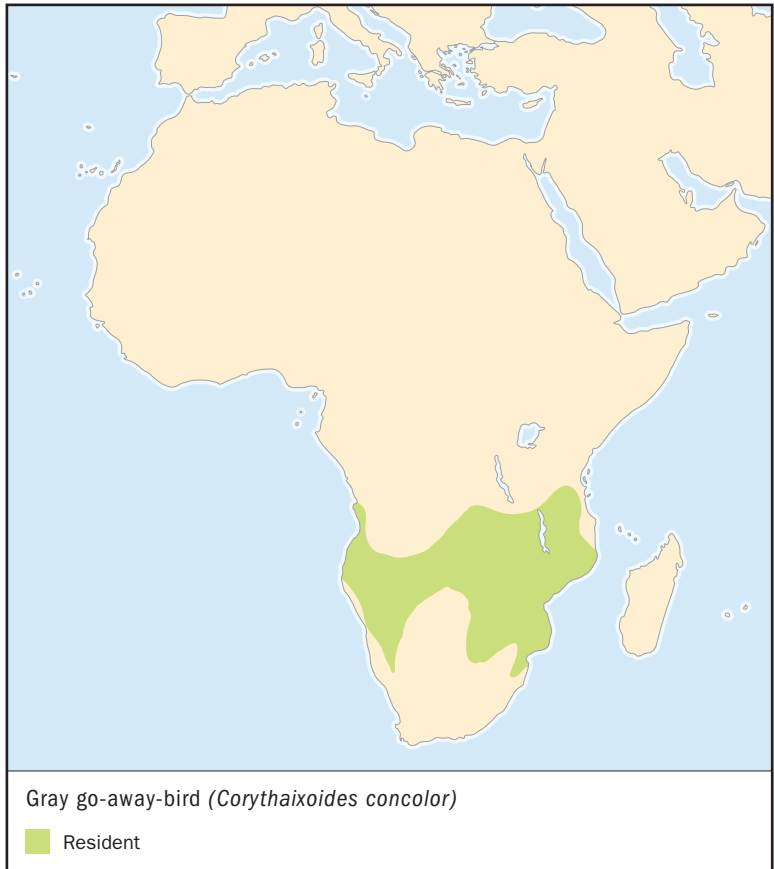
Birds travel in parties and pairs. After mating, they make a nest resembling a platform out of sticks. The hen lays two blue-green eggs. Both parents incubate the eggs, which hatch in twenty-nine to thirty-one days. In five to six weeks, hatchlings fledge, growing the feathers needed to fly. They will be cared for by their parents for about three months.

Great blue turacos and people: Some people eat turaco meat.

Conservation status: Although the great blue turaco is not threatened, people fear that the destruction of forests, along with trapping and hunting, will cause a drop in the bird population. ■



Great blue turacos are sociable and form parties, groups of up to eighteen birds, that stake out a territory as their own. (Illustration by Joseph E. Trumpey. Reproduced by permission.)



GRAY GO-AWAY-BIRD

Corythaixoides concolor

Physical characteristics: Go-away birds are dark gray and with lighter coloring around the eyes. Plumage is darkest on the tail, chin, chest, throat, and on small feathers called coverts. The crest on the bird's head consists of feathers of different lengths. The bird can raise or lower its crest.

The gray go-away bird is 18 to 20 inches (46 to 51 centimeters) in length and weighs from 7.1 to 12 ounces (202 to 340 grams). While not as colorful as turacos, go-away-birds have more wing strength and are better fliers.

Geographic range: Go-away birds live in Angola, the Congo, Democratic Republic of the Congo, Tanzania, Zambia, Malawi, Mozambique, Namibia, Zimbabwe, and Botswana.

Habitat: Go-away-birds live in savannas, grassland areas with some trees. The birds generally roost, or stay, in acacia (uh-KAY-shah) trees.

Diet: Go-away-birds eat fruit, leaves, seeds, flowers, and termites. The birds sometimes eat clay, and are the only members of the Musophagidae family to do so. Birds may raid gardens, and their feeding can cause the destruction of crops such as lettuce.

Behavior and reproduction: The go-away-bird is named for its call. People think the call sounds like the words, “Go away.” Since the bird calls when people approach, hunters think that the birds are giving a warning to animals.

When gray go-away-birds breed, the female has a clutch of one to four gray eggs. Both parents incubate the eggs, which hatch in twenty-six to twenty-eight days. Both parents care for the hatchlings. Parents may be assisted by helpers, birds thought to be offspring from an earlier mating.

The go-away-birds often pair up and are part of small family groups. They also form parties of up to twenty birds. They climb and

hop in trees and appear to be curious about the world around them. They are less shy around humans than other birds in the Musophagidae family. And just as in human families, not all relatives get along. Go-away birds may chase turacos away from water and food sources like fruit trees. However, the go-away-birds will not object if they are joined by birds such as parrots or pigeons.

Gray go-away-birds and people: Gray go-away-birds annoy hunters because the birds' call sounds an alarm that warns animals that hunters are approaching.

Conservation status: Go-away-birds are not considered at risk of extinction. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Stuart, Chris and Tilde. *Birds of Africa From Seabirds to Seed Eaters*. Cambridge, MA: The MIT Press, 1999.

Web sites:

BirdLife International. <http://www.birdlife.org/news/features/2003/08/kilum.html> (accessed on April 25, 2004).

Pickrell, John. "African Birds Understand Monkey Communication, Study Says." NationalGeographic.com. http://www.nationalgeographic.com/news/2004/03/18_040313_hornbills.html (accessed on April 25, 2004).

CUCKOOS, ANIS, AND ROADRUNNERS

Cuculiformes

Class: Aves

Order: Cuculiformes

One family: Cuculidae

Number of species: 129 species

monotypic order

CHAPTER

PHYSICAL CHARACTERISTICS

The Cuculidae family is also called the cuckoo family. It is a large family, with more than 128 species. Species in this family include common cuckoos, anis, and roadrunners. Birds range in length from the 5.1-inch (13-centimeter) pheasant cuckoo to the greater roadrunner, which is 22.1 inches (56 centimeters) long. Anis (ah-NEEZ) are also known as black cuckoos because of their dark plumage. The birds' heavy bill is either smooth or ridged. The greater ani is about 18.1 inches (46 centimeters) long.

Most Cuculidae are not colorful; their feathers are gray, black, or brown. They are slender and have narrow bills, long tails, and zygodactyl (zye-guh-DACK-tuhl) feet. Two toes on each foot face forward, and two face backward. Members of this family are terrestrial, meaning that some species live on land. However, they are able to fly.

GEOGRAPHIC RANGE

Cuckoos are located on every continent except Antarctica. The great spotted cuckoo is found in countries including France, Iraq, and Egypt. The common cuckoo spends summers in Europe and Asia, then winters in Africa. The greater anis range in Central and South America. Greater roadrunners live in the United States and Mexico.

HABITAT

Members of this large family live in a variety of habitats. Some cuckoos range in rainforests, where heavy rainfall

phylum

class

subclass

order

● **monotypic order**

suborder

family



MORE THAN A CARTOON CHARACTER

Unlike the Warner Brothers bird in the cartoon, the roadrunner doesn't say, "Beep, beep." The roadrunner coos, travels at a speed of 15 miles per hour (24 kilometers per hour) through the desert, and is wily about protecting its nest. The roadrunner will pretend to have a broken wing to lure predators, animals that hunt it for food, away from its nest.

produces an abundance of trees. Greater anis live in tropical coniferous forests, where trees don't shed leaves. They also range in grasslands where there are few trees. Roadrunners live in the desert.

DIET

Cuculidae eat insects like caterpillars and grasshoppers. Some species eat lizards, seeds, fruit, berries, and bird eggs.

BEHAVIOR AND REPRODUCTION

Most cuckoos are solitary, staying alone until they pair up to breed. Many species are monogamous (muh-NAH-guh-mus), mating with the same bird for life. About fifty cuckoo species are brood parasites. The female lays eggs in the nests of other birds. She leaves one egg in the nest, expecting the other bird

to care for her hatchling. Some cuckoos leave their eggs in a particular species' nest, but other cuckoos may use many hosts, birds that care for the cuckoo's eggs and young.

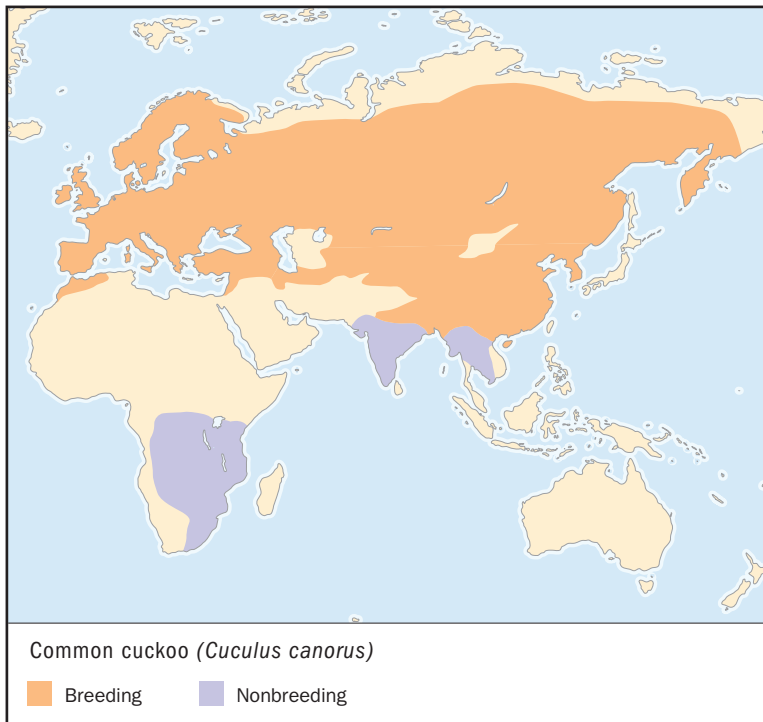
Anis live in groups and build nests after breeding. They are helped by cooperative breeders. Helpers, usually older offspring, help the parents care for the hatched birds. Roadrunners also nest and care for their young.

CUCULIFORMES AND PEOPLE

People who have never seen a cuckoo may recognize its call. They've heard an imitation of it when a cuckoo clock chimes the hours. Some people think that the actual cuckoo's call means that rain is on the way. In some places, cuckoos are called rainbirds.

CONSERVATION STATUS

Most species aren't at risk of becoming extinct, dying out. However, populations may decline if the amount of rainforest is reduced.



COMMON CUCKOO

Cuculus canorus

SPECIES ACCOUNTS

Physical characteristics: Both males and females have dark gray feathers on the top of their bodies. On the lower body are gray and white feathers. Females of some species have brownish red feathers on their upper breasts. The cuckoo's long tail is black.

Cuckoos have black bills and weigh about 3.7 ounces (115 grams). Their head-to-tail length is 12.6 to 13 inches (32 to 33 centimeters).

Geographic range: Common cuckoos are found throughout Europe and Asia. They also live in Siberia and parts of Africa.

Habitat: Common cuckoos live in various habitats. They're found in wooded areas, including rainforests where heavy rain produces many trees. They also live in meadows and grassland areas like steppes, where there are few trees.



Common cuckoos leave their eggs in the nest of any one of over 125 species of birds that act as hosts, hatching the cuckoo's egg and taking care of the young. (Roger Wilmschurst/Bruce Coleman Inc. Reproduced by permission.)

Diet: Common cuckoos are insectivores, primarily eating insects. Their diet includes hairy caterpillars, dragonflies, beetles, and crickets.

Behavior and reproduction: Common cuckoos are solitary and polygamous (puh-LIH-guh-mus). Both males and females breed with many different partners. There is no nest where the female lays eggs. Instead she relies on birds of other species to incubate the eggs and feed the young birds. After mating, the cuckoo looks to see which birds are building nests. The cuckoo may destroy one or

more eggs in the “host” bird’s nest. The cuckoo does this to make room for her egg. The host is usually fooled because the cuckoo chooses a bird that lays an egg similar to her own. While each cuckoo lays only one type of egg, cuckoos lay eggs of so many sizes and colors that their eggs resemble those of over 125 different host species.

Common cuckoos and people: The common cuckoo has long fascinated people because the female’s behavior is so different from that of a traditional mother who cares for her young. A form of the bird’s name is used to describe the victim of a dishonest act. Initially, a “cuckold” was man whose wife cheated on him—a “cuckold” is now someone who was deceived. In addition, “cuckoo” is a term used to describe someone who acts strangely.

Not all references to cuckoos, however, are negative. The birds’ call is imitated in the chimes of the cuckoo clock. And in England, people say that when they hear a cuckoo in nature that the season of spring will soon arrive.

Conservation status: Common cuckoos do not face extinction; their species is not in danger of dying out. ■



GREATER ROADRUNNER

Geococcyx californiana

Physical characteristics: Greater roadrunners are ground cuckoos, terrestrial birds that live primarily on the ground. They rarely fly, traveling on their sturdy legs instead of using their wings. Birds can fly for a short distance and will do so when in danger or traveling downhill.

The roadrunner's head-to-toe length is 22.1 inches (56 centimeters) long. The white-tipped tail accounts for about half of that length. Male roadrunners weigh 0.64 pounds (320 grams). Females weigh about 0.58 pounds (290 grams). Their plumage is black, white, and brown.



The female greater roadrunner builds a flat nest out of sticks and twigs in a cactus, tree, or shrub. (© C.K. Lorenz/Photo Researchers, Inc. Reproduced by permission.)

Geographic range: Greater roadrunners live in Mexico and the southwestern United States.

Habitat: Greater roadrunners live in the dry brush and scrub in the Mojave (moe-HAH-vay) and Sonoran deserts in the United States.

Diet: The greater roadrunner is an omnivore, which means one that eats both meat and vegetation. The bird is fast enough to catch lizards, snakes, spiders, insects, birds, and rabbits.

The roadrunner is among the few animals that hunt rattlesnakes. The bird moves so quickly that it can grab the snake by the tail. The roadrunner holds the rattler in its mouth and shakes it, hitting the snake's head on the ground until it dies. The roadrunner then swallows its prey.

The roadrunner's diet changes in winter when there are fewer animals in the desert. The bird will then eat plants.

Behavior and reproduction: Roadrunners are monogamous and mate for life. They live in pairs and breed in the spring. The male and female gather sticks and twigs for the birds' nest. The female builds a flat nest in a cactus, tree, or shrub. She then lays from two to twelve eggs. Laying eggs may take up to three days.

Both parents incubate the eggs; the male usually sits on them at night. The incubation period lasts from eighteen to twenty-one days. Eggs don't hatch at one time, and a week may pass between hatchings. Rain and food supply influences breeding patterns. Birds in California's Mojave and Sonoran Deserts breed only in the spring. Summer rains in the Arizona portion of the Sonoran increases the food supply, and birds breed in August and September.

Greater roadrunners and people: Greater roadrunners face the risk of being struck by vehicles as they run along desert roads.

Conservation status: Roadrunner populations are not in danger of extinction. However, some populations' numbers are dropping as areas develop. ■

FOR MORE INFORMATION

Books:

Stuart, Chris and Tilde. *Birds of Africa, from Seabirds to Seed Eaters*. Cambridge, MA: The MIT Press, 1999.

Wade, Nicholas, ed. *The New York Times Book of Birds*. New York: The Lyons Press, 2001.

Web sites:

The Bird Site, Los Angeles Natural History Museum. <http://www.nhm.org/birds/guide> (accessed April 25, 2004).

"Avian Orders: Cuculiformes." BIRDNET. <http://www.nmnh.si.edu/BIRDNET/ORDERS/Cuculiformes.html> (accessed May 8, 2004).

OWLS

Strigiformes

Class: Aves

Order: Strigiformes

Number of families: 2 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

Owls are easy to recognize. They have an almost human appearance, with upright posture, large rounded heads, and large eyes that face forward (most birds have eyes on the sides of their heads). All owls are carnivores, or meat-eaters, and several adaptations make them effective hunters, including a hooked beak for tearing flesh and strong feet tipped with sharp talons, or claws. The toes can be used in a two-forward, two-backward arrangement for a good grip on prey (most birds have three toes pointing forward and one pointing backward). Feathers are unusually soft, allowing for silent flight, so owls can hear their prey and approach it without warning.

Most owls are nocturnal, active at night and asleep by day. Adaptations for night hunting include eyes that can see in low-light conditions and very sensitive hearing. The eyes are enclosed in a ring of bone and cannot move freely, so owls must turn the entire head to look sideways. They do have extra flexible necks that allow the head to turn 270°, so an owl can see what's behind its back. Many owls have ears positioned asymmetrically on the head, with one higher than the other. This arrangement helps owls locate the source of a sound. Feathers on the face are arranged in a flat circle called a facial disk. It works much like a satellite dish, focusing sound waves on the ear openings.

Most owls have subdued, or dull, color. The feathers are usually gray or brown with spotted or streaky patterns that create a camouflage effect, allowing the owl to blend in with its

surroundings. This is useful when owls are sleeping during the day. The owls avoid being noticed by predators such as hawks. Male and female owls usually look alike but females are often are slightly larger.

The heaviest owl is the Eurasian eagle-owl, which weighs 9.25 pounds (4.2 kilograms). At 28 inches (71 centimeters), however, it is a little shorter in length than the great gray owl, which measures 33 inches (84 centimeters) long. The smallest owl is the elf owl, which weighs 1.4 ounces (40 grams) and is about 5 inches (13 centimeters) long.

GEOGRAPHIC RANGE

Owls are found on every continent except Antarctica. The tropics support the greatest variety of owl species.

HABITAT

The vast majority of owl species are forest dwellers. Few species live at high elevations or in very dry habitats. Most owls are sensitive to disturbance, but a few species adapt well to living among humans in suburban or urban areas. The eastern screech-owl is a good example. Members of the group called fishing owls are unusual for their habit of living near forest streams or in mangrove swamps and feeding mostly on fish. Only a few owl species undergo true migrations. Most species live in the same place year round. In winters when populations of small rodents such as lemmings or voles are low, northern owls may leave their usual home ranges and invade southern regions.

DIET

All owls are carnivores. They catch small animals with their feet, kill them with a bite to the neck, and swallow them head-first. Most owls hunt from a raised perch. They sit, watch, and listen, then swoop or glide to their prey. At the last minute, they swing their legs forward and spread their talons to strike. Very large owls (such as eagle-owls) take medium-sized mammals such as rabbits, skunks, and monkeys. Medium-sized owls take mostly small mammals, such as voles, rats, mice, and shrews. Small owls feed mostly on insects along with other invertebrates such as snails, spiders, scorpions, moths, or crickets. Many owls occasionally take bats, birds, small reptiles, and amphibians in addition to their preferred prey. Many species

cache (KASH), or store, extra prey to eat later. In cold climates cached prey may freeze. The owl just sits on it to thaw it. Owls swallow their prey whole but cannot digest hard bones, fur, and feathers. These materials are later coughed up in a neat package called an owl pellet.

BEHAVIOR AND REPRODUCTION

Most owls are active at night and sleep by day. Usually owls roost in sheltered spots—thick foliage or a branch close to a tree trunk. Some people think owls are “tame” because roosting owls may allow humans to come quite close. Actually, this behavior is an adaptation for avoiding detection by predators. If they’re disturbed, owls pull their feathers in tight to look slim and lean close to the tree trunk to avoid being noticed. A few species are active by day, notably the snowy owl. This species lives in the Arctic, where daylight lasts twenty-four hours in the breeding season.

Because owls are active at night, they depend more on their ears than their eyes to communicate with other owls. Males mostly use vocalizations (sounds), rather than colorful feathers or flight displays, to get a female’s attention. Owls also call to defend their territory and to stay in touch with each other. In most species, both sexes vocalize but the male calls more than the female.

Most owls are solitary. They hunt and roost alone, except during the breeding season. Most owls breed just once a year. They do not build their own nests. The smallest owls often nest in abandoned woodpecker holes. Larger owls use old crow or raptor nests, the top of a snag (a dead tree, standing, with the top broken off), a tree hole, a natural cave, or an abandoned building. A few species nest on the ground, including snowy owls and short-eared owls. Burrowing owls nest underground in prairie dog, badger, or ground squirrel burrows. Female owls do not gather any nest material. Eggs are laid on bare ground or the floor of the tree cavity.

A male and female owl bond by preening each other, straightening and cleaning their feathers. In many species, the male offers a gift of food to his mate. Owl eggs are white and more round than oval. A typical clutch ranges in size from two to four eggs for small owls to five to eight eggs for larger owls. In most species, the female lays one egg a day until the clutch is complete. But where many songbirds start to incubate the eggs

after the clutch is complete, female owls start incubating with the first egg. That means the owlets hatch on different days and are of different sizes. Often, the youngest, smallest nestlings do not survive.

OWLS AND PEOPLE

Owls have always inspired the human imagination. A Paleolithic rock painting of an owl is one of the oldest known human drawings. The Bible describes owls as birds of waste places and forbids eating them. In many cultures owls are considered bad omens or creatures of the underworld, probably because they fly at night and have spooky-sounding calls. The sight or sound of an owl is thought to warn of death. This idea is seen repeatedly in the plays of William Shakespeare.

Not every culture has feared owls. In ancient Greece the owl was the symbol of Athena, the goddess of wisdom. In their nighttime activity, owls were thought to be like hard-working scholars. Owls continue to be a symbol of education in the United States in the twenty-first century.

CONSERVATION STATUS

As of 2003, the IUCN lists seven owl species as Critically Endangered, facing an extremely high risk of extinction, or dying out, in the wild; nine species as Endangered, facing a very high risk of extinction in the wild; and eleven species as Vulnerable, facing a high risk of extinction in the wild. A number of owl species occur on only one small island or in one small area. That makes these species particularly vulnerable to extinction.

In the United States two owl species are protected under the Endangered Species Act. The ferruginous pygmy-owl is listed as Endangered and the spotted owl is listed as Threatened.

Habitat loss because of logging or agriculture is the biggest problem for owls. Other causes of mortality include illegal shooting, collisions with cars and human-built structures, electrocution on power lines, and poisons used against rats and mice.



BIRDS OF PREY?

For a long time, owls were thought to be close relatives of birds in the order Falconiformes (the hawk-like birds). The two groups do have a lot in common. Both are hunters with excellent eyesight. They have strong legs and sharp talons for catching prey. They have hooked beaks for killing and eating their prey. The term “birds of prey” is still often used to describe the two groups. In 1985, however, researchers took a careful look at bird DNA. They decided owls are most closely related to birds in the order Caprimulgiformes, or nightjars. Besides the genetic evidence, there are other similarities between these two groups. Both are active at night, their voiceboxes are similar, and their feathers are arranged in the same way.

FOR MORE INFORMATION

Books:

BirdLife International. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions, 2000.

Duncan, James R. *Owls of the World: Their Lives, Behavior and Survival*. Buffalo, NY: Firefly Books, 2003.

Johnsgard, Paul A. *North American Owls: Biology and Natural History*. Washington, DC: Smithsonian Institution Press, 2002.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

König, Claus, Friedhelm Weick, and Jan-Hendrik Becking. *Owls: A Guide to the Owls of the World*. New Haven, CT: Yale University Press, 2002.

Web sites:

Lewis, Deane P. The Owl Pages. <http://www.owlpages.com> (accessed on June 25, 2004).

family CHAPTER

BARN OWLS

Tytonidae

Class: Aves

Order: Strigiformes

Family: Tytonidae

Number of species: 16 species

PHYSICAL CHARACTERISTICS

Like “typical” owls in the family Strigidae, barn owls have forward-facing eyes, excellent vision in dim light, and very sensitive ears. (Research shows that the common barn owl can locate prey by sound alone in complete darkness.) Tytonids differ from “typical” owls in having long, compressed bills, rather short tails, and rather long legs. The facial disk is heart-shaped instead of round. They lack the feather structures called ear tufts that many typical owls display. Their dark eyes are comparatively small and oval-shaped. The inner edge of the middle claw is serrated, like a comb. Barn owls use this claw to preen their feathers.

Most species in this group have a pale belly contrasting with a darker gray or brown back. The feathers show a beautiful all-over speckling. Females tend to be larger, heavier, and darker in color than males.

The smallest member of this family is the Oriental bay owl, just 9 inches (23 centimeters) long. Common barn owls vary widely in size, and some members of this species are also very small. They may weigh as little as 6.6 ounces (187 grams). The longest and heaviest barn owls are female Australian masked owls at 2.8 pounds (1.3 kilograms) and 22.4 inches (57 centimeters).

GEOGRAPHIC RANGE

Barn owls are widely distributed. The species for which the family is named, the barn owl, is the world’s most widespread species of land bird. Barn owls are found on every continent

phylum

class

subclass

order

monotypic order

suborder

▲ **family**



LIFE ON THE FARM

Barn owls seem to be declining in numbers in the United States, Britain, and Canada. The likely reason for these declines is the loss of farmland, which makes very good habitat for barn owls. Barns and silos provide nest sites, and the owls can hunt for rodents in nearby fields. In the last few decades, however, many farms have been converted to housing developments or industrial parks. To help owl populations, conservationists are putting up nest boxes for owls in some areas. The boxes look like jumbo birdhouses. One reason to help owls is that they provide free pest control. One study by the Connecticut Department of Environmental Protection reports a barn owl family will eat more than 1,000 rats and mice in one nesting season.

except Antarctica and on many islands. No members of the family are found in Earth's coldest regions, however. No barn owls live in the Arctic or in the northernmost parts of Europe, Asia, or North America. Barn owls are also absent from the driest desert regions such as the Sahara and the Middle East.

HABITAT

Barn owls need a mix of wooded areas and open space. They also require tree cavities, caves, or other protected areas for nest sites.

DIET

Barn owls eat mostly small mammals such as voles and mice. They will also take birds, reptiles, amphibians, and large insects, however. In Australia, where there are no native mammals, barn owls prey on small marsupials. Barn owl pellets have a distinctive dark coating of mucus.

BEHAVIOR AND REPRODUCTION

Most barn owls are solitary in their habits, but some of the smallest species will gather in groups to hunt and roost when prey is plentiful. Usually they hunt from perches, but some of the smallest species hunt on the wing. Barn owls are almost exclusively nocturnal. They return to their roosts at dawn, often calling as they do so. They sleep by day, usually balancing on one leg with the wings closed and hunched forward to hide the pale belly.

Large species defend large home ranges. Small species are less territorial and defend only a small area around the nest site. When confronted with an intruder, barn owls perform distinctive defensive displays. A disturbed owl will make bowing movements, tilting forward with the tail raised, wings spread to the sides, and head lowered and swinging from side to side. At the same time it hisses and snaps its bill. If the intruder doesn't back off, the owl may strike with one foot or even spray feces.

Many typical owls make hooting calls, but no barn owls hoot. Their calls sound like screams, screeches, twitters, and whistles. A courting pair will engage in a trilling duet.

Most barn owls nest in sheltered locations such as tree holes and abandoned buildings. Grass owls are the exception—they tunnel into tall grass. The female incubates the eggs and broods the hatchlings while the male brings food to her and her young. Barn owls in temperate climates typically raise one brood per year. Species in warmer climates may raise two to three broods per year. Clutch size varies from one or two in sooty owls to seven or eight in barn owls and grass owls. Females lay more eggs when prey is abundant. After leaving the nest, the owlets may depend on their parents for food for several more weeks to months.

BARN OWLS AND PEOPLE

With their pale feathers and eerie calls, barn owls are sometimes called “ghost owls” or “spirit owls.” In many cultures, they are regarded as associates of witches. They have a long history of living in association with humans. Evidence from Pleistocene cave dwellings shows that owls and humans shared the same caves.

CONSERVATION STATUS

Three species are listed as Endangered, facing a very high risk of extinction, on the IUCN Red List, the Madagascar red owl, Africa bay owl, and the Taliabu masked owl. One barn owl species, the Minahassa masked owl, is listed as Vulnerable, facing a high risk of extinction.



Young barn owls learn to preen, using their bill to straighten and clean their feathers. (Jane Burton/Bruce Coleman Inc. Reproduced by permission.)

humans on farms or in urban areas as long as there are nest sites (for example, barns, silos, or church steeples) and open space for hunting.

Diet: Barn owls take whatever prey is available, the right size, and active at night. They seem to choose the slowest and fattest species among all the possible prey, usually specializing in small rodents such as voles, mice, and shrews. Small birds, amphibians, reptiles, and fish are occasionally taken, and invertebrates such as insects are rarely eaten.

Though most owls are “sit and wait” predators, barn owls often hunt by flying low and slow over open ground. They use their sense of hearing more than sight to locate prey. They usually hunt alone, but if prey is plentiful, they may hunt in groups.

Barn owls are monogamous (muh-NAH-guh-mus). At the beginning of the breeding season, males make courtship flights, patrolling

their territories while calling loudly. Sometimes a male and female will fly together, or the male will chase the female while both scream loudly. One courtship display is the moth flight. The male hovers in mid air in front of a female. Another is the in-and-out flight. The male flies into and out of the nest sight as if showing it off. The female shows her interest with a snoring call, and the male responds with a gift of food.

Barn owls adjust their nesting efforts to the amount of prey that is available. If food is plentiful, the female lays a large number of eggs and may even nest a second time in the same year. She lays one egg every two or three days till the clutch is complete but starts incubating the eggs right away. This means the first owlet may hatch two to three weeks before the last. Young owls leave the nest when they are fifty-six to sixty-two days old. A female may start to lay more eggs before the last owlet from her first clutch has fledged.

Barn owls and people: One nickname for the common barn owl is monkey-faced owl. Some people actually believed they were flying monkeys. Barn owls have been introduced to some islands as a form of natural pest control. Grape growers in California are among the farmers that now welcome barn owls to their properties by hanging up nesting boxes. The owls help to control rodent pests.

Conservation status: Barn owls in North America have been declining slightly in numbers for the past four decades. Similar small declines are documented in Canada, Britain and Europe. So far, wildlife experts are not concerned that the species is threatened. ■

FOR MORE INFORMATION

Books:

BirdLife International. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions and BirdLife International, 2000.

Duncan, James R. *Owls of the World: Their Lives, Behavior and Survival*. Buffalo, NY: Firefly Books, 2003

Johnsgard, Paul A. *North American Owls: Biology and Natural History*. Washington, DC: Smithsonian Institution Press, 2002.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

König, Claus, Friedhelm Weick, and Jan-Hendrik Becking. *Owls: A Guide to the Owls of the World*. New Haven, CT: Yale University Press, 2002.

Web sites:

BirdLife International. <http://www.birdlife.net> (accessed on June 28, 2004).

Lewis, Deane P. The Owl Pages. <http://www.owlpages.com> (accessed on June 28, 2004).

OWLS

Strigidae

Class: Aves

Order: Strigiformes

Family: Strigidae

Number of species: About 190 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

These owls are often called the “typical” owls. They have typical owl traits including a large, rounded head and forward-facing eyes set in a facial disk, an arrangement of feathers that focuses sound into the ears. They are adapted for night hunting, with eyes that see well in low-light conditions, very sensitive hearing, strong feet, and sharp talons (TAL-unz). Many members of this family have ear tufts on top of their heads. These are just feathers, not used for hearing. Typical owls differ from the family Tytonidae, barn owls, in several ways. Many have yellow eyes, and the facial disk is round rather than heart-shaped.

GEOGRAPHIC RANGE

Representatives of the family can be found on every continent except Antarctica. In contrast to tytonids, which are found only in regions where the climate is mild, some typical owls live in very cold climates.

HABITAT

Typical owls can be found in almost every type of habitat, but 95 percent are forest dwellers. The term “forest” covers a wide range of habitats, from tropical rainforest to boreal evergreen forest.

DIET

Small mammals such as voles are the most important food item for many typical owls. The type of prey taken varies with

size. Small owls eat mostly insects but may also take small birds, reptiles, and amphibians. The largest owls, the eagle-owls, may take such large animals as rabbits, hares, and pheasants. The group called fishing owls eats fish almost exclusively.

BEHAVIOR AND REPRODUCTION

Most typical owls hunt by sitting on an elevated perch while watching and listening for prey. Exceptions to this hunting style include Northern hawk owls, which hunt like falcons, chasing other birds on the wing. Long-eared and short-eared owls patrol for prey by flying low and slowly over fields. In winter, great gray owls detect voles not by sight, but by the sounds they make under the snow, then plunge-dive. They can break through snow crusts thick enough to support a man.

Many typical owls make classic owl “hoo-hoo” vocalizations, but also use a variety of other vocalizations to communicate. Most typical owls are solitary night hunters. A few, such as long-eared owls, gather in groups in winter to roost. A few are active by day, including burrowing owls.

About 10 percent of all typical owls undergo true seasonal migration. The northern saw-whet owl is one example. Many species in northern regions move south in winters when their rodent prey are scarce.

Most strigids are monogamous (muh-NAH-guh-mus; having only one mate). In a few species (the boreal owl is one example), a male may take two mates simultaneously if food is plentiful. Most members of the group nest in tree cavities, shallow caves, or the abandoned nests of crows or hawks. A few species nest on the ground. Burrowing owls nest in the underground burrows of prairie dogs and other mammals.

The average clutch size is two to four, though eagle owls typically lay a single egg and burrowing owls can have clutches of ten or more when food is plentiful. The female incubates the eggs and broods the chicks while the male feeds the family. The



NEW OWLS DISCOVERED

Owls are not well studied because they fly at night, and many species live in remote places, far from human dwellings. Scientists have had some owl surprises in recent years. One species of barn owl, the Congo Bay owl, was thought to be extinct. Then it was rediscovered in 1996 in Rwanda. In 2001, researchers discovered an entirely new species, never before known to science, in Brazil. It is called the Pernambuco pygmy-owl. Yet another new species, the Sumba hawk owl, was also discovered in 2001, on the Indonesian island of Sumba. All three species live in areas where forest is being cut down, however. Conservationists hope the news of owl discoveries will not be followed by news of their extinction.

young often leave the nest before they can fly to clamber around in the nest tree. At this stage they are called branchers.

OWLS AND PEOPLE

Through the ages, owls have been the subjects of myth, folklore, and art. People have used owls in different ways. Snowy owls are a subsistence food for Arctic people. Owl body parts are used by traditional healers in Southeast Asia. They have been revered in some cultures. In ancient Babylon, for example, pregnant women wore protective owl amulets. In many cultures, however, owls have been feared. The Swahili believed owls made children sick. Some Arab cultures believed owls were evil spirits that carried children off. In the twenty-first century, conservationists are working to overcome old superstitions and protect owls threatened by loss of habitat.

CONSERVATION STATUS

Six species in this family are considered Critically Endangered, facing an extremely high risk of extinction, six species are Endangered, facing a very high risk of extinction, and eight are Vulnerable, facing a high risk of extinction.



EASTERN SCREECH-OWL

Otus asio

SPECIES ACCOUNTS

Physical characteristics: Eastern screech-owls have ear tufts but often fold them flat, so they appear to have smooth, rounded heads. Individuals may be gray or rufous (red) in color. Rufous owls are more common in warm and moist climates such as the southern Appalachians. Gray owls are more common in northern regions and dry southern areas such as Texas. Research suggests gray birds survive better in heavy snow and cold temperatures.



Eastern screech-owl parents continue to feed their young for eight to ten weeks after the owlets fledge, grow feathers necessary for flying. (Joe McDonald/Bruce Coleman Inc. Reproduced by permission.)

Individuals range in length from 6.3 to 9.8 inches (16 to 25 centimeters). Females are slightly larger than males, and owls from northern regions tend to be larger than individuals in southern regions.

Geographic range: Eastern screech-owls are found throughout the eastern half of the United States and north into southern Canada.

Habitat: Screech-owls occupy a variety of habitats, from young to mature forests, and from lowlands and river valleys to mountain slopes. They also live alongside humans in suburbs and cities.

Diet: These small owls eat small prey, mostly invertebrates including insects, earthworms, and crayfish. Screech-owls in northern climates are more likely to take small mammals and songbirds.

Behavior and reproduction: The primary call is a distinctive, horse-like whinny that increases in pitch, then falls off gradually, ending with a trembling sound. When they are courting, males and females sing loud trilled duets.

Screech-owls usually nest in abandoned woodpecker holes. The female may lay two to six eggs. She incubates them for twenty-six to thirty-four days while the male brings food. The owlets fledge (grow feathers necessary for flying) twenty-five to twenty-seven days after hatching. Their parents continue to feed them for another eight to ten weeks.

Eastern screech-owls and people: Eastern screech-owls do well in suburban areas with mature trees and will use wooden nest boxes.

Conservation status: Populations tend to cycle naturally from high to low and back. Temporary declines are sometimes misinterpreted as evidence the species is in trouble. However, the IUCN does not consider this species to be threatened. ■



BARRED EAGLE-OWL

Bubo sumatranus

Physical characteristics: The dark back is marked with reddish brown bars, contrasting with the barred, grayish white belly. The eyes are brown and the beak and feet are yellow. Barred eagle-owls have very noticeable ear tufts.

The group called “eagle-owls” includes the largest owls in the world. This species is a fairly small member of the group, 15.7 to 18.1 inches long (40 to 46 centimeters), a little smaller than the great horned owl.

Geographic range: Southern Myanmar, peninsular Thailand, south to Sumatra and Bangka Island.

Habitat: Tropical forests intersected by streams, secondary growth, plantations, and forested gardens.

Diet: Barred eagle-owls feed on large insects such as grasshoppers and beetles, along with small rodents, birds, and snakes.

Behavior and reproduction: The main call is a low-pitched “hoo.” Pairs are thought to mate for life and may return to the same nest site year after year, often a natural tree cavity.

Barred eagle-owls and people: No particular significance to humans is known.

Conservation status: This species tolerates disturbed habitat and will nest around human homes. It is not considered threatened by the IUCN. ■



*Barred eagle-owls live in tropical rainforests in Southeast Asia.
(Illustration by Patricia Ferrer.
Reproduced by permission.)*



SNOWY OWL

Nyctea scandiaca

Physical characteristics: This is the only mostly white owl. Males may be completely white; females have black bars on the back and belly. These heavy-bodied owls have very large, rounded heads and no ear tufts. The eyes are yellow and the dark beak may be hidden by feathers. Snowies are particularly well adapted to the cold. The legs and feet are completely covered with feathers. The feathers are unusually stiff, to keep out Arctic winds.

Geographic range: Snowy owls are found in a ring of habitat that circles the North Pole. In summer they breed on the tundra. In winter they may move as far south as the northern Great Plains of North America or north central Europe and Asia.

Habitat: Snowy owls nest on tundra. On their southward wanderings, they often frequent open, grassy areas such as airfields and golf courses.

Diet: Snowy owls feed almost exclusively on several kinds of Arctic voles and lemmings, species that undergo regular boom-and-bust population cycles. They sometimes take much larger prey, including ptarmigans and snowshoe hares, and often steal food from Arctic foxes. In a region where daylight can last for twenty-four hours during the summer months, they routinely hunt by day.

Behavior and reproduction: Snowy owls rarely vocalize outside of the breeding season. The typical call is a gruff, low-pitched hoot. They nest right on the ground, usually on a raised mound. A typical clutch has five eggs. The female incubates the eggs for thirty-one to thirty-three days while the male feeds her. The young leave the nest after twenty to twenty-eight days but cannot fly well until they are about fifty days old.

Snowy owls and people: In years that snowy owls wander south, their presence thrills bird watchers. A subsistence food for the Inuit, snowy owls may legally be hunted by all Alaska residents. In the twenty-first century, the snowy owl has been made popular by the success of the Harry Potter books and movies.

Conservation status: Snowy owls are not considered threatened by the IUCN, although populations in northern Europe seem to be declining somewhat. Populations are not well monitored. ■



FOR MORE INFORMATION

Books:

Birdlife International. *Handbook of the Birds of the World*. Vol. 5, *Barn-owls to Hummingbirds*. Barcelona: Lynx Edicions, 1992.

BirdLife International. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions and BirdLife International, 2000.

Duncan, James R. *Owls of the World: Their Lives, Behavior and Survival*. Buffalo, NY: Firefly Books, 2003.

Johnsgard, Paul A. *North American Owls: Biology and Natural History*. Washington, DC: Smithsonian Institution Press, 2002.

Kaufman, Kenn. *Lives of North American Birds*. New York: Houghton Mifflin Company, 1996.

König, Claus, Friedhelm Weick, and Jan-Hendrik Becking. *Owls: A Guide to the Owls of the World*. New Haven, CT: Yale University Press, 2002.

Web sites:

Lewis, Deane P. The Owl Pages. <http://www.owlpages.com> (accessed on June 27, 2004).

Snowy owls spend their summers on the tundra, and head south for the winter, to areas such as the Great Plains of North America. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

NIGHTJARS

Caprimulgiformes

Class: Aves

Order: Caprimulgiformes

Number of families: 5 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

The order Caprimulgiformes is known as nightjars and “nightjar” is also the name of the largest family in the order. An order consists of animals with similar characteristics. Caprimulgiformes have large heads, and their large eyes help them see at night. Also large is the gape, the width of the mouth when open. Around the mouths of some birds are whisker-like bristles. The birds have short legs, and many birds have one toe on each foot that points backward, forward, or away from the foot.

Caprimulgiformes have plain plumage. Adults’ feathers are brown, gray, brownish yellow, and rufous, a reddish brown. Plumage is patterned, and this protective coloration helps Caprimulgiformes blend in with trees and hide from predators. Members of this order are also known as night birds because they are nocturnal, active at night.

The nightjar family, Caprimulgidae, consists of nineteen genera and seventy-seven species. Birds range in length from 6 to 16 inches (15 to 40 centimeters) and weigh from 0.7 to 6.6 ounces (20 to 188 grams). Members of this family have long wings and tails. They do not have bristles around their mouths. Furthermore, on the middle toe is a claw that is serrated, segments of the claw resemble the teeth of a comb.

The oilbird family, Steatornithidae, has one genus and one species. The birds have hooked bills and are about 17 to 19 inches (43 to 49 centimeters) long. They weigh from 13 to 16 ounces (375 to 455 grams). They are similar to nightjars, and have long wings and tails.

The frogmouth family, Podargidae, consists of two genera and thirteen species. The family name comes from the frogmouth's huge gape and the large beak, which resemble the mouth of a frog. Birds range in length from 7.5 to 24 inches (19 to 60 centimeters) and weigh from 1.5 to 23.6 ounces (43 to 670 grams). Wings and tails are rounded.

The owlet-nightjar family, Aegothelidae, is sometimes called the owlet-frogmouth family. The family consists of one genus and eight species. Owlet-nightjars range in length from 7 to 12 inches (18 to 30 centimeters) and weigh from 1 to 3.5 ounces (29 to 98 grams). Birds' eyes face forward, and the gapes are as wide as birds' heads. Owlet-nightjar wings and tails are long.

The potoo family, Nyctibiidae, consists of one genus and seven species. Birds range in length from 8 to 23 inches (21 to 57 centimeters) and weigh from 1.6 to 2.2 ounces (46 to 624 grams). Birds resemble frogmouths, but are thinner and have smaller bills. Wings and tails are long.

GEOGRAPHIC RANGE

Nightjars, the largest family in the order Caprimulgiformes, are located throughout much of the world. There are twenty-five Caprimulgidae species in Africa, and nightjar species live in countries in North and South America, Europe, Asia, and Australia. These birds are not found in the Arctic and Antarctic.

Oilbirds are found in Central and South America. They live in countries including Panama and Bolivia. Birds also range in Trinidad and Tobago.

Frogmouth species live in Asian countries including India, Vietnam, Java, and the Philippines. They also range in Australia and South Pacific countries including Tasmania, New Guinea, and the Solomon Islands.

Owlet-nightjars range in the South Pacific on Australia, Tasmania, New Caledonia, northern Moluccas, the Solomon Islands, and New Guinea.

Potoos live in Central and South America, and are found in countries from Mexico to Uruguay. They also range in Hispaniola and Jamaica.

HABITAT

Habitats are as varied as the families in this large order. Some members of the nightjar family live in rainforests, where heavy

rainfall throughout the year produces abundant growth. They also range in grasslands and savannas, where there are fewer trees. Nightjars also live in semi-arid deserts and forests.

Oilbirds live in caves along coasts and in the mountains. They range in forests including coniferous or evergreen forests, where trees do not shed leaves. Frogmouths live in rainforests and other wooded areas. Owlet-nightjars live in tropical forests, savannas, open woodland, and scrub, areas with under-sized vegetation. Potoos live in tropical forests and in trees in savannas.

DIET

Oilbirds eat fruit that they pluck from trees. All other caprimulgiforms eat arthropods, animals with no backbones. These include insects, spiders, and millipedes. Larger birds eat vertebrates, creatures with backbones, like frogs, mice, small birds, and bats.

BEHAVIOR AND REPRODUCTION

Caprimulgiformes are nocturnal, meaning they are active at night. Some families are also crepuscular (kri-PUS-kyuh-lur), becoming active at twilight. Birds in this order communicate with calls.

Most species are monogamous (muh-NAH-guh-mus), mating with one partner. Nightjars do not build nests, and the female lays one to two eggs. She and the male incubate the eggs, sitting on them until they hatch. In some species, both parents feed the young birds. Female oilbirds have a clutch of two to four eggs, and both parents incubate them. Female frogmouths lay from one to three eggs, and both parents incubate. Owlet-nightjars lay three to four eggs. Females incubate and both parents feed the young. Potoos usually have a clutch of one egg. Both parents incubate and care for the young.

While frogmouths, owlet-nightjars, oilbirds, and potoos live their lives in one area, some nightjar species travel great distances. European nightjars breed in Europe and migrate to Africa for the winter.

CAPRIMULGIFORMES AND PEOPLE

In the Caprimulgiformes order, some family names reflect the relationship between birds and people. Nightjars have been called “goatsuckers” because people believed that the nocturnal birds flew down and sucked the milk from goats and cows. When

animals died, people mistakenly blamed the birds. However, nightjars do not drink milk.

The name “nightjar” comes from Europe. The bird’s loud call can last several minutes. Since birds are nocturnal, their noise “jarred” or startled sleeping people and woke them up.

Furthermore, oilbirds received their names because the birds eat fruit containing oil and fat. In the past, people captured the birds and boiled them to collect the oil. They used the oil for cooking or as fuel to light their lamps. Now people are interested in observing oilbirds. People visit caves where these unique birds roost during the day.

CONSERVATION STATUS

There is concern about the future of some Caprimulgiformes species, according to the World Conservation Union (IUCN). These species are threatened by loss of habitat as forests are cleared for farming and development.

The Puerto Rican nightjar is Critically Endangered, facing an extremely high risk of extinction in the wild in the immediate future. However, conservation efforts could result in the ranking being changed to Endangered, facing a very high risk of extinction in the near future.

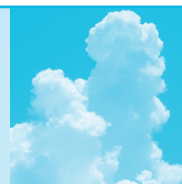
The Itombwe nightjar and the white-winged nightjar are Endangered. Only one specimen of the Itombwe nightjar was found in the Democratic Republic of the Congo. White-winged nightjars live in Bolivia and Brazil. When this species was discovered in Paraguay, it was a sign that the population was larger. The species ranking was changed from Critically Endangered to Endangered.

Two Indonesian species, the satanic-eared nightjar and Bona-parte’s nightjar, are Vulnerable, facing a high risk of extinction in the wild.

FOR MORE INFORMATION

Books:

Stuart, Chris and Tilde. *Birds of Africa From Seabirds to Seed Eaters* Cambridge, MA: The MIT Press, 1999.



GUIDED BY ECHOES

Oilbirds move safely in dark caves by making clicking sounds. The birds listen to the echoes made when the sounds bounce off surfaces like cave walls. Oilbirds know to fly away from the echoes or they will crash into something. The guiding process oilbirds use is called echolocation. Bats, porpoises, and whales also use echolocation.

Periodicals:

Pratt, Thane K. "Evidence For A Previously Unrecognized Species of Owlet-Nightjar." *The Auk* (January 2000): 1–11.

Web sites:

"Australian Owlet-Nightjar." Australian Museum Online. http://www.amonline.net.au/factsheets/owlet_nightjar.htm (accessed on June 1, 2004).

"White-throated nightjar." Environmental Protection Agency/Queensland Parks and Wildlife Service. http://www.epa.qld.gov.au/nature_conservation/wildlife/nocturnal_animals/birds/whitethroated_nightjar/ (accessed on June 1, 2004).

family CHAPTER

OILBIRD Steatornithidae

Class: Aves

Order: Caprimulgiformes

Family: Steatornithidae

One species: Oilbird (*Steatornis caripensis*)

PHYSICAL CHARACTERISTICS

Oilbird plumage (feathers) is the color of cinnamon, and the bird's reddish brown feathers are dotted with white spots. The long tail is colored by faint black bars, lines of color. Males and female birds have similar coloring, and females are slightly smaller than males.

The oilbird is the only member of the Steatornithidae family. While they resemble owls, order Strigiformes, oilbirds belong to the Caprimulgiformes order. Like other families in the Caprimulgiformes order, the oilbird has a large gape, the width of the mouth when it's open.

Birds in the Caprimulgiformes and Strigiformes orders are nocturnal, active at night, and their large eyes provide the strong vision needed to see at night. Both owls and oilbirds have hooked bills, but the owl has sharp claws on its feet. The owl uses these talons (TAL-unz) to capture prey, animals hunted as food. Oilbirds have small feet and eat only fruit.

Oilbirds eat fruit that is rich in fat and oil, which provides the energy needed to fly. When chicks are fed these fruits before they are able to fly, they become very fat, often growing larger than the adults. While adult birds weigh from 13 to 16 ounces (375 to 455 grams), a seventy-day-old oilbird chick weighs approximately 21 ounces (600 grams). As the young bird develops, the parents feed it less often. The combination of less food and growing into adulthood causes the oilbird to lose weight. Oilbirds got their name from the fact that in the past chicks were captured and boiled down in order to make oil.

phylum

class

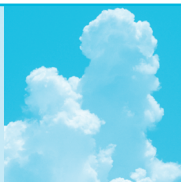
subclass

order

monotypic order

suborder

▲ family



BIRDS AS AN OIL SOURCE?

In centuries past, people in Central and South America realized that the fruit-eating birds were a source of oil. People captured the plump nestlings and boiled them to obtain yellow oil. People cooked with the oil and used it to light their lamps. In the twenty-first century, oilbirds became a protected species in many countries, so they are no longer hunted for their oil.

Adult oilbirds measure 17 to 19 inches (43 to 49 centimeters) in length. The bird has blue eyes and a yellow beak with whisker-like bristles on both sides. The oilbird uses its bill to pluck fruit from trees.

Since oilbirds have short feet, they do not perch or stand on trees. Instead, the bird rests, which is like sitting. At rest, the head of the oilbird is lower than its tail. Furthermore, their feet are so weak that they do very little walking, instead they fly to get from one place to another.

Their wingspan, the distance between the fully spread wings, is approximately 37.5 inches (95 centimeters). The wings are wide and slotted so that the oilbird can fly slowly while carrying loads into the dark caves where they live during the day. At night, oilbirds use their powerful wings to fly

as far as 75 miles (120 kilometers) in search of food.

GEOGRAPHIC RANGE

Oilbirds live mainly in South America and are found in the countries of Guyana, Trinidad, Venezuela, Colombia, Ecuador, Peru, Brazil, and Bolivia. Oilbirds also range in the Central American countries of Costa Rica and Panama, and the islands of Tobago and Aruba.

HABITAT

Oilbirds live in caves along coasts and in the mountains. Birds make their homes in areas near coniferous or evergreen forests, where trees do not undergo seasonal changes. While generally found in caves, oilbirds also live inside gorges, deep, narrow areas.

DIET

Oilbirds are frugivores, animals that eat fruit. Oilbirds eat the fruits of palm trees, laurel trees, and avocado trees.

Groups of oilbirds forage at night, looking for food. They fly down, pluck fruit from the trees, and swallow it whole. Oilbirds eat the soft pulp inside the fruit. During the day, birds digest their food and then regurgitate (re-GER-jih-tate) the



Oilbirds use echolocation to find their way through their dark caves. (© John J. Bamgma/Photo Researchers, Inc. Reproduced by permission.)

seeds. Regurgitation is the process of vomiting, removing food in the stomach through the mouth.

BEHAVIOR AND REPRODUCTION

The Spanish name for oilbird is *guácharo*, meaning “one who cries.” Oilbirds can be noisy. If people invade their caves, the birds will shriek or squawk loudly to warn other oilbirds and frighten the invaders. The oilbird family is social, and colonies, groups of birds, live together in caves.

A large cave in Caribe, Venezuela, is said to house about ten thousand oilbirds. A protected population lives in Dunston Cave in Trinidad’s Asa Wright Nature Centre. The center tracks the bird population by doing a bird count several times each year. The bird census in November of 1998 was 119 adults. In June of 2003, there were 120 adults, twenty chicks, and two eggs. The following December, the center counted 154 adult oilbirds.

Oilbirds become active at twilight, and the colony flies out at night to forage for food. Birds usually look for fruit in pairs and groups. Their vision is strong enough to hunt for food at night. However, the birds rely on sound to guide themselves inside dark caves.

Oilbirds enter the cave and make clicking sounds at a frequency low enough to be heard by people. They click at the



rate of ten to twelve clicks per second, with the number of clicks increasing as oilbirds get closer to an obstacle. Oilbirds know to click faster because they listen to the echo of the click as the sound bounces off surfaces like walls and rocks. Their brain compares the echo with the sound of the original click. The brain analyzes how close the echo is, and the birds adjust their flight so they will not crash into something. This navigation system, called echolocation (eck-oh-loh-KAY-shun), is also used by porpoises, whales, and bats.

During the day, oilbirds roost, rest in caves. Oilbirds are thought to be monogamous (muh-NAH-guh-mus), with a single male and single female bird staying together permanently. The two birds roost together on flat surfaces like ledges.

Oilbirds often breed during the rainy season, but this may vary by location. In Venezuela's Caribe Cave, females lay eggs

in April and May. The timing is believed to be connected with the abundance of laurel tree fruit. In Trinidad, the population of nestlings, birds without feathers, is highest in May and June.

Breeding oilbirds build nests far inside caves and away from predators. Nests are usually on ledges located 33 to 66 feet (10 to 20 meters) above the floor of a cave. The oilbird nest resembles a saucer and is made of material including regurgitated seeds and fruit pulp. Birds use their saliva as a glue to hold the nest together.

Female oilbirds lay a clutch of two to four white eggs. Both parents incubate the eggs, sitting on them until they hatch in thirty-two to thirty-five days. The chicks weigh from 0.4 to 0.5 ounces (12 to 15.5 grams). They are born with their eyes closed and have few feathers. Parents feed the chicks fruit, and the young birds become plump. They weigh almost twice as much as adult birds at seventy days old. The nestlings have feathers, but their tails and wings are smaller than adults. At they grow into adulthood, their feathers develop and they lose weight. Young oilbirds leave the nest when they are 110 to 120 days old.

OILBIRDS AND PEOPLE

Oilbirds were once hunted as food or a source of oil. In the twenty-first century, the birds are legally protected in many countries, which means that it is against the law to injure or kill oilbirds in those nations. Furthermore, oilbirds are a tourist attraction. People vacation and visit oilbird caves in places like Caribe, Venezuela, and Trinidad.

CONSERVATION STATUS

Oilbirds are not in danger of extinction, dying out. However, they may become endangered if forests are cut down, since trees provide the only source of food for these fruit-eating birds.

FOR MORE INFORMATION

Web sites:

"Oilbirds." Asa Wright Nature Centre & Lodge. <http://www.asawright.org/nature/oilbirds.html> (accessed on June 1, 2004).

Querna, Betsy. "Native Son Captures Beauty of Trinidad's 'Eden.'" National Geographic Today. http://news.nationalgeographic.com/news/2001/05/0508_trinidadphotographer.html (accessed on June 1, 2004).

Thomas, Betsy T. "Family STEATORNITHIDAE (OILBIRD)" *Handbook of the Birds of the World*. Online at <http://www.hbw.com/hbw/volume5/famil501.html> (accessed on June 1, 2004).

family CHAPTER

FROGMOUTHS

Podargidae

Class: Aves

Order: Caprimulgiformes

Family: Podargidae

Number of species: 13 species

PHYSICAL CHARACTERISTICS

Frogmouths received their name because their large beaks look like the mouths of frogs. Like others in the order Caprimulgiformes, frogmouths have large heads and large eyes. Members of this order are nocturnal, and their large eyes help the birds see at night. Their middle toe is longer than their other toes. Unlike other Caprimulgiformes, frogmouths do not have a toe on each foot that is serrated, separated into parts like the teeth of a comb.

Frogmouths have been said to resemble owls. While both owls and frogmouths are nocturnal, active at night, and have large eyes, there are some differences. Frogmouths have wide, curved bills. Owls have short, hooked bills. Frogmouths have short legs and small feet. Frogmouths do not have talons, the sharp claws that characterize birds of prey like owls.

Prey is the animal or plant that predators hunt for food. The bill and mouth help frogmouths capture food. Their wide-bill reveals a large gape, open mouth. Around the bill are bristles. These whisker-like hairs are believed to guide the prey into the bird's mouth.

Frogmouths have soft plumage, feathers, and weigh from 1.5 to 23.6 ounces (43 to 670 grams).

There are three species in the Australian frogmouth genus (JEE-nus; group of related animals within a family), *Podargus*. Feather colors include various shades of brown and gray. Patterns in the plumage such as white spots and black streaks help to camouflage birds. With this protective coloring, birds blend

phylum

class

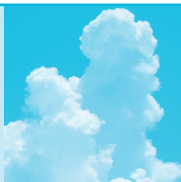
subclass

order

monotypic order

suborder

▲ family



HIDING IN PLAIN SIGHT

Frogmouths rest in trees during the daytime, camouflaged by plumage that resembles the colors of the branches where they roost. The birds do not just rely on their coloring to keep them safe. Frogmouths sleep lengthwise, as if standing up. If they sense a disturbance, birds shut their eyes, stiffen their posture, and point their bills upward. Frogmouths imitate their surroundings so well that people looking directly at them think they are looking at branches.

in with the trees where they perch. Birds range in length from 12.8 to 15.2 inches (32 to 38 centimeters). Their tails and wings are long.

The remaining ten species belong to the Asian frogmouth genus, *Batrachostomus*. Plumage is mostly brown on males of some species. Females are bright rufous, reddish brown. The Asian frogmouths are smaller than Australian frogmouths. The length of Asian frogmouths ranges from 9.2 to 16 inches (23 to 40 centimeters.) Most Asian species have wider bills and longer tails than their Australian relatives. Their wings are more rounded than Australian frogmouths.

GEOGRAPHIC RANGE

Australian frogmouths live in Australia, New Guinea and surrounding islands, Tasmania, and the Solomon Islands. Asian frogmouths live in Asian countries including India, Vietnam, Sri Lanka, the Philippines, Borneo, and Java.

HABITAT

Frogmouths live in a range of habitats where there are trees. Some species live in rainforests where heavy rain produces plenty of trees. Other birds live in grassland and scrub areas where there are fewer trees. Species live in plantations, where people plant trees, and birds also live in neighborhoods.

DIET

Frogmouths are insectivores, insect eaters. Their diet includes caterpillars, beetles, and millipedes, insects with many legs. Some species eat spiders, frogs, and mice. They fly to the ground to capture food or chase after flying prey like moths.

BEHAVIOR AND REPRODUCTION

Frogmouths are crepuscular (kri-PUS-kyuh-lur) and nocturnal, meaning they become active at twilight, just before dark, and in the evening. They rest in trees during the day and hunt for food at night. Birds roost in trees during the day, camouflaged (KAM-uh-flajd) by their color. Since birds hide so well, there is still a lot to learn about some species of frogmouths.

Australian frogmouths build platform-like nests made of sticks. Nests are located in trees, and female Australian frogmouths lay from one to three eggs. The female sits on the eggs, incubating them until they hatch. Both parents feed the chicks.

The Asian frogmouths build a small nest on a branch or tree stem. The nest is constructed of soft feathers called down. Spider webs and tiny lichen plants are placed around the nest to camouflage it. Female Asian frogmouths lay one egg. In some species, the male incubates the egg, sitting on it during the day.

FROGMOUTHS AND PEOPLE

For the most part, frogmouths remain hidden from people and have little relationship with them.

CONSERVATION STATUS

Although frogmouths are not in danger of dying out, loss of habitat could cause a decrease in some frogmouth populations. According to the World Conservation Union (IUCN), changes such as deforestation, cutting down trees, could have an effect on species including the large frogmouth, Gould's frogmouth, and the Bornean frogmouth.

SPECIES ACCOUNT



TAWNY FROGMOUTH *Podargus strigoides*

Physical characteristics: Tawny is a brownish yellow color, and this frogmouth species has variations of those colors in their patterned plumage. Like other members of the Caprimulgiformes order, feather colors blend in with the color of trees. This form of camouflage is known as protective coloration.

The upper feathers of male tawny frogmouths are usually gray with black streaks. Lower plumage is a lighter gray, with black streaks and white bars. There may be various shades of brown in the plumage. Female tawny frogmouths have more brown and rufous in their plumage.

Tawny frogmouths have yellow eyes and light brown bills surrounded by bristles. The birds have small legs and feet. The middle toe of each foot is longer than other toes. Tawny frogmouths range in length from 13.5 to 21 inches (34 to 53 centimeters). They weigh from 6 ounces to 1.5 pounds (180 to 670 grams).

Geographic range: Tawny frogmouths are found in Australia and Tasmania.

Habitat: Tawny frogmouths live in all Australian habitats except rainforests where heavy rain produces an abundance of trees that do not shed leaves and deserts where there are no trees. They can be found in grassland areas where there are few trees, deciduous forests where trees shed leaves, plantations of trees planted by people, and tree groves. Tawny frogmouths also live in the gardens of suburban neighborhoods.

Diet: Tawny frogmouths eat insects, worms, slugs, and snails. They also eat frogs, small mammals, reptiles, and birds. The choice of food for these nocturnal birds is based on what prey they can find at night.

Tawny frogmouths usually get their prey by swooping down, flying quickly from their tree perches. Birds use their strong bills to capture prey and then swallow it.

Hungry tawny frogmouths may also fly from their perches and try to capture flying insects like moths. This chase in the air is not just dangerous for the prey, which could be captured in flight. The tawny frogmouth may chase insects illuminated by the car headlights. While the lights help the predator see its prey, the birds often collide with the cars and die.

Behavior and reproduction: Tawny frogmouths usually breed from August to December. However, birds in dry areas may breed after heavy rains. Birds build a platform nest of loose sticks in the fork of a tree branch. The female lays two or three eggs. Both parents incubate the eggs. The male usually incubates during the day. The male may do this because the female is more colorful and would be seen by predators during daylight.

Eggs hatch in about thirty days. Both parents feed the chicks. The young birds fledge, grow their feathers, after thirty to thirty-five days. Tawny frogmouths usually only breed once a year. However, female birds in southern Australia sometimes have two broods, sets of chicks.

Tawny frogmouths and people: People driving at night may unintentionally kill tawny frogmouths that fly in front of their car while hunting flying insects.

Conservation status: Tawny frogmouths are not in danger of extinction, dying out. ■

FOR MORE INFORMATION

Web sites:

“Red List Text.” BirdLife International. http://www.birdlife.org/datazone/downloads/red_list.txt (accessed on June 5, 2004).

“Tawny Frogmouth.” Australian Museum Online. http://www.amonline.net.au/factsheets/tawny_frogmouth.htm (accessed on June 1, 2004).

“Tawny Frogmouth.” Environmental Protection Agency/Queensland Parks and Wildlife Service. http://www.epa.qld.gov.au/nature_conservation/wildlife/nocturnal_animals/birds/tawny_frogmouth/ (accessed on June 1, 2004).

“Tawny Frogmouth.” Honolulu Zoo. http://www.honolulu zoo.org/tawny_frogmouth.htm (accessed on June 1, 2004).

family CHAPTER

OWLET-NIGHTJARS

Aegothelidae

Class: Aves

Order: Caprimulgiformes

Family: Aegothelidae

Number of species: 7 species

PHYSICAL CHARACTERISTICS

The name “owlet-nightjar” refers to the characteristics that these birds share with owls, members of the Strigiformes order, and with nightjars, other members of the Caprimulgiformes order. Owlet-nightjars and other members of this order have large heads and large eyes that provide strong vision at night.

Owlet-nightjars also look somewhat like small owls. Both owlet-nightjars and owls have long, narrow tails and wings. The eyes of owlet-nightjars and owls face forward like a human’s eyes do. The owl’s eyes are in a facial disk, an arrangement of facial feathers that focuses sounds to its ears. The round shape of the owl’s face is very clear; the facial disk is not as clear on the owlet-nightjar.

Owlet-nightjars have short legs, a characteristic of the Caprimulgiformes order. However, their legs are not as short of those of other bird families in this order. Furthermore, owlet-nightjars have long toes and claws on their feet, which is similar to the owls, who have sharp claws called talons (TAL-unz). Some other families in the Caprimulgiformes order have a toe that is serrated like the teeth of a comb.

Frogmouths have wide, curved bills, and owls have a short, hooked bill. Owlet-nightjars have tiny bills surrounded by whisker-like bristles. Their small bill opens to a gape, width of the open mouth, which is as wide as their head.

All members of the owlet-nightjar family have dark eyes and soft plumage, feathers, in various shades of brown. Other

phylum

class

subclass

order

monotypic order

suborder

▲ family

plumage colors include gray, tan, and rufous, a reddish brown color. Feathers are patterned with streaks of color. Owlet-nightjars range from 7 to 12 inches (18 to 30 centimeters) in length. They weigh from 1 to 3.5 ounces (29 to 98 grams).

Little is known about some owlet-nightjar species because the birds are nocturnal and remain hidden during the day. However, researchers have been able to observe the Australian owlet-nightjar. Females are usually rufous and males are gray. Both have paler coloring on their undersides. There are pale black bars on the undersides, and they have two black stripes on their heads. Australian owlet-nightjars are 8.3 to 10 inches long (20 to 23 centimeters) and weigh 1.4 to 2.1 ounces (39 to 60 grams).

GEOGRAPHIC RANGE

Owlet-nightjars live in Australia, Moluccas, New Guinea and nearby islands, Tasmania, and New Caledonia.

HABITAT

Owlet-nightjars live in various types of forests. Species in New Guinea range in rainforests, where rain throughout the year produces abundant growth. Owlet-nightjar species live in mountain forests, and in scrubland where there are fewer trees.

DIET

Owlet-nightjars are insectivores, animals that eat insects. Their diet also includes small invertebrates, spineless creatures like millipedes and spiders. The mountain owlet-nightjar of New Guinea eats insects and earthworms.

The diets of some owlet-nightjar species are not known. The birds remain hidden from people during the day and are not always seen at night when they hunt for food.

Owlet-nightjars usually hunt and catch their prey by flying from their tree perches to the ground. Sometimes the owlet-nightjars chase and catch food while flying. The birds catch prey with their bills and swallow it whole.

BEHAVIOR AND REPRODUCTION

Australian owlet-nightjars hunt for food within a specific territory. Birds usually pair up to forage, look for food, at night. During the day, birds remain hidden in nests.

Owlet-nightjars are hole-nesters, building nests in holes in trees and openings in rocks.

Australian owlet-nightjars breed from July through December. The male and female birds build a nest out of green leaves. They build the nest in openings such as the hollow of a tree or the crevice in a rock. The female lays two to five eggs in the nest. Both parents incubate the eggs, sitting on them to keep them warm. The eggs hatch after about four weeks. Owlet-nightjar chicks stay in the nest for about three to five weeks. These owlet-nightjars have one brood, set of chicks, each year.

Threats to owlet-nightjars include predators like domestic cats that hunt the birds and eat them. In addition, when owlet-nightjars hunt for food, they may be killed by drivers who do not see the birds flying at night.

OWLET-NIGHTJARS AND PEOPLE

Owlet-nightjars have little contact with people.

CONSERVATION STATUS

The New Caledonian owlet-nightjar is Critically Endangered, facing an extremely high risk of extinction in the wild, according to the World Conservation Union (IUCN). The New Caledonian owlet-nightjar population was thought to be extinct.

The New Caledonian owlet-nightjar was identified in 1880 when a specimen, a single bird, was collected. No other birds were seen and the New Caledonian owlet-nightjar was declared extinct. However, the species had not died out. A New Caledonian owlet-nightjar was seen in 1998, and the conservation status was changed.

Australian owlet-nightjars live throughout Australia and New Guinea, are not considered endangered.

Other species hide so well that it is not known whether they are endangered. However, owlet-nightjar populations will be affected if habitat is lost due to deforestation, the removal of trees from forests.

SPECIES ACCOUNT



FELINE OWLET-NIGHTJAR *Aegotheles insignis*

Physical characteristics: Feline owlet-nightjars look somewhat like cats. Their faces have a feline shape. Tufts of feathers above the eyes look like cats' ears, and they have whiskery bristles around the bill. Feline owlet-nightjars have long feathers that appear fluffy. Plumage color ranges from rufous to brown. Feather patterns include brown and black vermicular, twisted, lines and white spots on the body. There are two white stripes on the head, and birds have white bars on their tails.

Feline owlet-nightjars are about 12 inches (30 centimeters) long. They weigh from 2.1 to 3.5 ounces (59 to 98 grams).

Geographic range: Feline owlet-nightjars live in New Guinea.

Habitat: Feline owlet-nightjars live in montane, or mountain, rainforests. The trees are evergreen, and do not change with the seasons.

Diet: Feline owlet-nightjars eat beetles and other insects.

Behavior and reproduction: There is no information available regarding feline owlet-nightjars' behavior or breeding and nesting patterns.

Feline owlet-nightjars and people: There is no known relationship between feline owlet-nightjars and people. However, research may change that and provide additional information about feline owlet-nightjars.

Conservation status: Feline owlet-nightjars are not in danger of extinction. ■

FOR MORE INFORMATION

Periodicals:

Brigham, R. Mark, Gerhard Körtner, Tracy A. Maddocks, and Fritz Geiser. "Seasonal Use of Torpor by Free-Ranging Australian Owlet-Nightjars." *Physiological and Biochemical Zoology* (September/October 2000): 613–620.

Pratt, Thane K. "Evidence For a Previously Unrecognized Species of Owlet-Nightjar." *The Auk* (January 2000): 1–11.

Web sites:

"Australian Owlet-Nightjar." Australian Museum Online. http://www.amonline.net.au/factsheets/owlet_nightjar.htm (accessed on June 1, 2004).

"New Caledonian Owlet-Nightjar (*Aegotheles savesi*)." BirdLife International. http://www.birdlife.org/datazone/search/species_search.html?action=SpcHTMDetails.asp&sid=2328&m=0 (accessed on June 5, 2004).

POTOOS
Nyctibiidae

Class: Aves

Order: Caprimulgiformes

Family: Nyctibiidae

Number of species: 7 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

PHYSICAL CHARACTERISTICS

Like other members of the Caprimulgiformes order, the potoo (poe-TOO) has a large head and large eyes that provide the stronger vision needed for birds that are active at night. Caprimulgiformes have large gapes, which is the width of the mouth when open. A large gape allows birds to catch prey, creatures like insects hunted for food. The potoo's gape is as wide as its head.

While most members of the Caprimulgiformes order have whisker-like bristles on their faces, some potoo species lack bristles, or their bristles are not well-developed. The visible portion of all potoos' bills is small. Potoos have long wings and long, pointed tails. They have short legs and strong toes.

From head to tail, potoos measure from 8 to 23 inches (21 to 57 inches). They weigh 1.6 to 22 ounces (46 to 624 grams). The birds' soft feathers are usually gray, yellowish brown, blackish brown, and white. The rufous potoo is a combination of orange and rufous (reddish brown). Wing color is described in the name of the white-winged potoo.

Bands of colors in the potoo family's feathers form patterns so that potoos resemble the trees where they live. Adult males and females have similar plumage (feather) coloring.

During the nineteenth century, birds in the Nyctibiidae family were called "tree nighthawks." They are now known by the name of one of the species. People thought it sounded like birds in the species were saying the word "potoo."

GEOGRAPHIC RANGE

Potoos live in Mexico, Costa Rica, Panama, Uruguay, Nicaragua, Colombia, Venezuela, French Guiana, Guyana, Ecuador, Peru, Brazil, Bolivia, Argentina, Tobago, Jamaica, Hispaniola, and Trinidad.

HABITAT

Potoos live in rainforests, where rain throughout the year produces abundant growth. The birds live in coniferous or evergreen forests, where trees don't undergo seasonal change and shed leaves. Potoos also live in trees in grassland areas called savannas, where there are only a few trees.

DIET

Potoos eat flying insects like beetles, moths, termites, crickets, grasshoppers, and fireflies. Birds fly after their prey and catch it in the air. However, they sometimes take prey off of a plant or tree.

BEHAVIOR AND REPRODUCTION

Potoos are nocturnal, becoming active at night. They are solitary feeders, traveling alone while they hunt for food.

During the day, potoos perch on a tree branch or trunk. The bird stands very still on a broken branch or one that slopes. In this motionless position, with its tree-like coloration, the potoo looks like a part of the tree and predators can't see the bird.

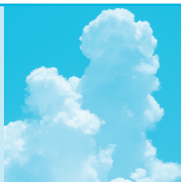
Predators that hunt and kill potoos for food include hawks, monkeys, and other mammals that can climb trees.

Even when asleep, the potoo is on the alert for predators. The potoo holds its head so that its bill is pointed upward. Its eyes appear shut, but the potoo looks out from partially open eyes. If predators get too close, the potoo flies away. The bird returns to the same perches for weeks or months.

At night, the potoo hunts for food. The bird chases prey, catching food in its mouth. The potoo then returns to its perch and eats.

Members of the potoo family are noisy at night. They sing loudly, and their calls vary by species. Calls are similar to whistles.

Potoos are monogamous (muh-NAH-guh-mus), a male and female pair up for long-term breeding. The birds build a nest



BIRDS WITHOUT NESTS

Potoos do not build nests for their young. Instead of gathering twigs or other nesting material, potoos choose an indented area in a tree for the one egg that the female bird lays. Locations include a broken branch, the forked part of a branch, or a tall tree stump.

After the female lays the egg, both parents incubate it. The potoos are motionless during the daytime, a behavior that young potoos quickly learn.

in the hollow of a tree, a branch, or in a broken branch. The female lays usually one white egg there. Both parents incubate the egg, keeping it warm until it hatches. Unlike birds that sit when they incubate, potoos stand upright during incubation. The egg hatches in about thirty days, and the bird grows feathers in forty to fifty-five days.

POTOOS AND PEOPLE

People rarely see the well-hidden potoos. In the past, the birds were the subject of legends and superstition. Some people thought it was bad luck to mock a potoo's call. The call of the great potoo was supposed to be a sign of upcoming trouble or a death.

Today, people interested in the environment visit potoo habitats. They try to view and photograph the birds.

CONSERVATION STATUS

Potoos are not in danger of extinction (dying out), according to guidelines from the World Conservation Union (IUCN). However, the number of birds has dropped as habitat is lost when trees are cut down.



GRAY POTOO

Nyctibius griseus

SPECIES ACCOUNT

Physical characteristics: The gray potoo's plumage is brown with streaks of other colors that include gray, black, and reddish brown. The bird has black streaks on the crown (top) of the head and the lower part of the body. The potoo's patterned plumage resembles the tree branches where potoos perch, so the birds can roost (rest) during the day without being seen by predators. Male and female potoos have similar coloring.



Gray potoos live in the rainforests and grasslands of Mexico and Central and South America, where they eat moths, grasshoppers, beetles, termites, and fireflies. (Patricio Robles Gil/Bruce Coleman Inc. Reproduced by permission.)

The most colorful part of the gray potoo is the iris when the bird is seen at night. The iris is the round portion of the eye surrounding the pupil. If light is shined on the gray potoo, its irises look yellow or orange.

The head-to-tail length of gray potoos ranges from 13 to 16 inches (33 to 41 centimeters). Gray potoos weigh from 5 to 7 ounces (145 to 202 grams). The gray potoo looks much like the northern potoo. However, their calls are so different that each was placed in a separate species.

The gray potoo's call consists of five notes described by people as sounding mournful, or sad.

The gray potoo is also known as the common potoo, the giant nightjar, and poor-me-one.

Geographic range: Gray potoos live in Mexico and Central and South America. Birds are found in the countries of Costa Rica, Panama, Uruguay, Nicaragua, Colombia, Venezuela, French Guiana, Guyana, Ecuador, Peru, Brazil, Bolivia, Argentina, Tobago, Jamaica, Hispaniola, and Trinidad.

Habitat: Gray potoos live in rainforests, coniferous or evergreen forests, and in grassland where there are few trees. Birds also live on plantations, land where people plant trees.

Diet: Gray potoos eat moths, grasshoppers, beetles, termites, and fireflies.

Behavior and reproduction: Gray potoos are solitary and monogamous birds. The breeding season when birds mate varies by location for this species found throughout much of Latin America. In Tobago, gray potoos mate between March and May. The female potoo lays one egg. Both parents incubate the egg that hatches in thirty to thirty-three days. The chick fledges, grows its flying feathers, in forty to fifty-one days.

Gray potoos and people: In Brazil, people thought the mournful song of the gray potoo was actually the sound of a person who had been unlucky in the love. According to the legend, either the love was unrequited (the other person wasn't interested), or the relationship was ended by death or separation. The potoo's sad call was thought to be the song of the unhappy person who had died and had been brought back to life in another form (reincarnated).

Conservation status: Gray potoos are not at risk of extinction. ■

FOR MORE INFORMATION

Books:

Attenborough, David. *The Life of Birds*. Princeton, NJ: Princeton University Press, 1998.

Periodicals:

Young, Bruce E., and James R. Zook. "Nesting of Four Poorly-Known Bird Species on the Caribbean Slope of Costa Rica." *Wilson Bulletin* (March 1999): 124.

Web sites:

Tobago Home Folklore and History of Trinidad and Tobago. <http://www.tobago.hm/folk/bm001bird-c-l.htm#g> (accessed on May 25, 2004).

NIGHTJARS

Caprimulgidae

Class: Aves

Order: Caprimulgiformes

Family: Caprimulgidae

Number of species: 77 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The Caprimulgidae family is the largest family in the order Caprimulgiformes. Nightjars measure 6 to 16 inches (15 to 40 centimeters) from head to tail. Their weight ranges from 0.7 to 6.6 ounces (20 to 188 grams). Plumage (feather) color includes brown, gray, brownish yellow, and rufous (reddish brown). Those colors form patterns that help nightjars hide in trees.

The nightjar has a large head with large eyes that provide the strong vision needed to see during the night. The bird's small bill opens to reveal a large gape, which is the width of the mouth when open. Nightjars have short legs and long wings and tails.

Nighthawks, a group of nightjars, don't have bristles, and they usually have longer tails and wings than nightjars.

GEOGRAPHIC RANGE

Nightjar species are found throughout most of the world. No species live in the Arctic, Antarctic, and some oceanic islands.

Some nightjar species migrate across continents. These include European nightjars that breed in Europe and spend the winter in Africa.

HABITAT

Nightjars live in habitats ranging from semi-arid deserts to rainforests, where abundant rainfall produces plentiful growth. The birds occur in deciduous forests where trees shed leaves and coniferous forests that do not undergo seasonal changes. Nightjars also live in grassland areas with fewer trees.

DIET

Nightjars fly after prey or hunt on the ground for food such as insects, flies, beetles, ants, and caterpillars. Birds sometimes eat spiders. Larger nightjars may eat frogs and small birds.

BEHAVIOR AND REPRODUCTION

Nightjars spend the daytime roosting, sitting quietly in trees. Many species are nocturnal, meaning that they are active at night. Some species are crepuscular (kri-PUS-kyuh-lur), starting their activities at twilight, the time between sunset and darkness. During active times, nightjars hunt for food, eat, and mate. Nightjars are noisy at night. Males sometimes call to attract females, while other calls are territorial songs to warn other birds to stay away from a location.

The start of the breeding season depends on when there is a large amount of insects to feed young birds. In most climates, there are fewer insects during winter months, so breeding takes place in the spring or summer. Females of some species breed twice during the season and have two broods (sets of young).

Most nightjar species are monogamous (muh-NAH-guh-mus). Some species mate for life. In other species, male and female stay together for the breeding season.

Nightjars do not build nests. Females lay one to two eggs on the ground or in a tree branch. They incubate the eggs, sitting on them to keep them warm. Males of some species also help with incubation. Eggs hatch in seventeen to twenty-one days, and in some species, both parents feed chicks. The young fledge, grow feathers, in about two weeks. Two weeks later, the birds are able to fly and feed themselves.

Nightjars are hunted by predators including owls, crows, hawks, foxes, rats, and snakes. To make it difficult for predators to see them, the birds take advantage of their coloration and remain motionless, perched in trees, during the daytime.

NIGHTJARS AND PEOPLE

Nightjars received their name because their loud night call jarred (disturbed) sleeping people. The birds are also known



WHY BIRDS HAVE WHISKERS

Many nightjars have whisker-like bristles around their mouths, but opinion is divided about why the birds have bristles. Some researchers think that the bristles help the birds capture prey while flying by helping to push insects into nightjars' mouths. Others disagree with that explanation, saying the bristles may protect the nightjars' eyes from being injured by prey struggling to escape.

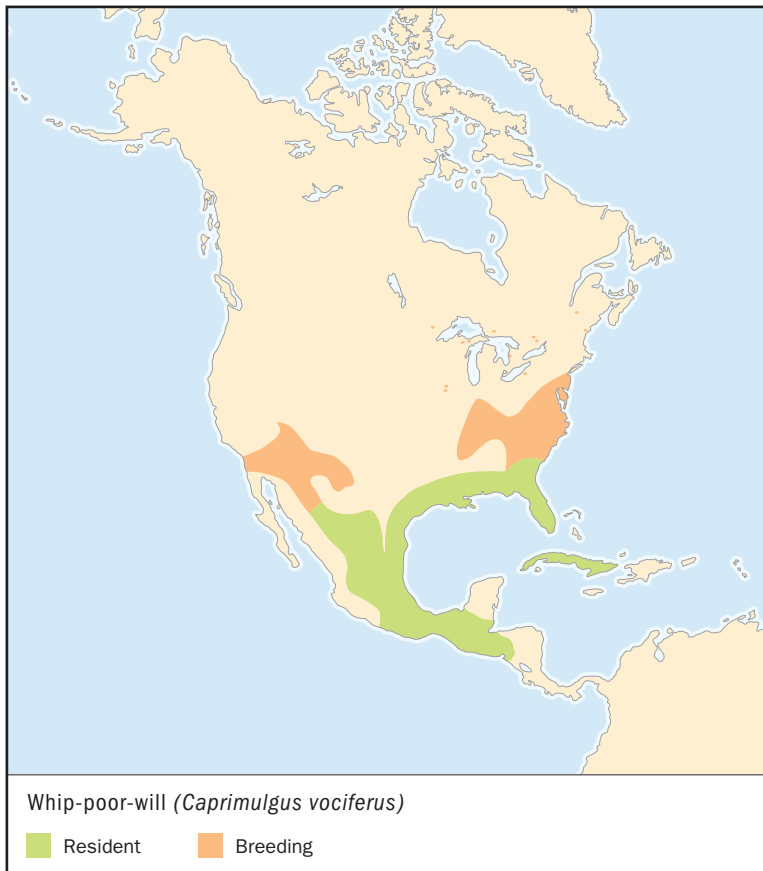
as “goatsuckers” because people wrongly thought the birds drank milk from goats and cows. Nightjars actually hunt insects near the animals.

CONSERVATION STATUS

Several nightjar species are at risk as their habitat is lost when trees are cut down, according to World Conservation Union (IUCN). The Puerto Rican nightjar is Critically Endangered, facing an extremely high risk of extinction, dying out. That ranking could be changed to Endangered, facing a very high risk of extinction, due to conservation programs.

The white-winged nightjar’s status has changed from Critically Endangered to Endangered, reflecting the new discovery of birds in Paraguay. Also Endangered is the Itombwe nightjar. Just one bird has been found in the Democratic Republic of the Congo.

Rated Vulnerable, facing a high risk of extinction, are the satanic-eared nightjar and Bonaparte’s nightjar.



WHIP-POOR-WILL

Caprimulgus vociferus

SPECIES ACCOUNTS

Physical characteristics: Whip-poor-wills range in length from 9 to 10 inches (23 to 26 centimeters). They weigh from 1.5 to 2.4 ounces (42 to 69 grams). Their patterned plumage is brown, gray, and, white.

These birds have rounded wings. Their feet are so tiny that whip-poor-wills perch on trees length-wise, as if lying on their sides.

The whip-poor-will is named for its call. People thought they heard the bird, say, “whip-poor-will.” Birds make this call as the sky becomes dark at night and just before dawn when skies lighten. Whip-poor-wills also call their name at night, especially when the moon is visible.

Geographic range: Whip-poor-wills live in the United States, Canada, Mexico, Cuba, and Central American countries including Honduras.

Habitat: Whip-poor-wills live in pine forests, deciduous forests, and open land where there are fewer trees.

Diet: Whip-poor-wills eat moths, beetles, ants, grasshoppers, and other insects.

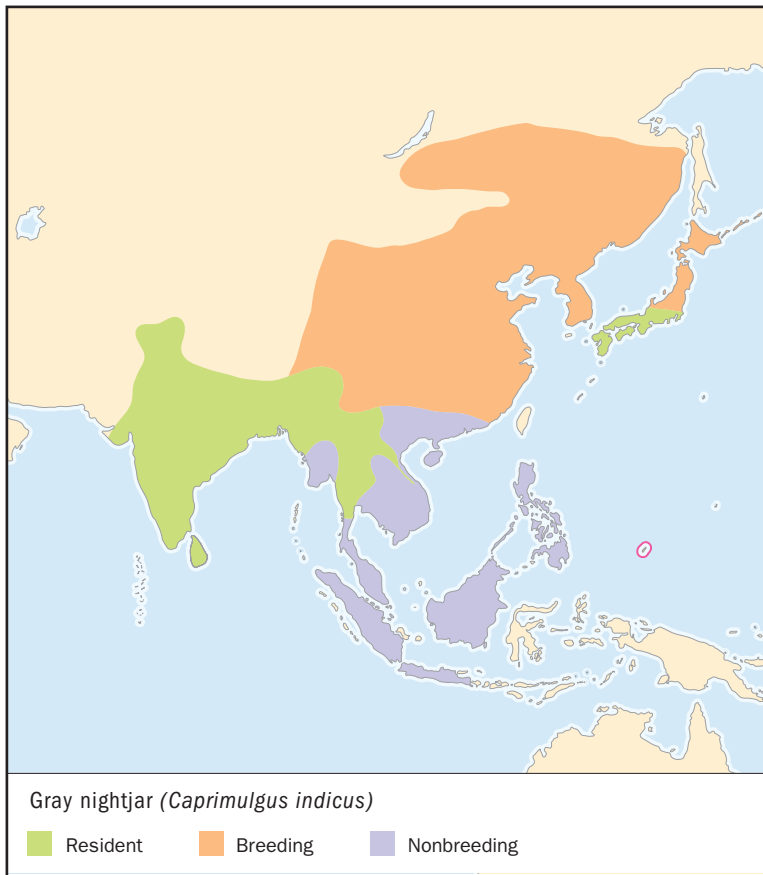
Behavior and reproduction: Whip-poor-wills are nocturnal. Their breeding season starts at the beginning of May. Birds mate in areas ranging from Canada to Mexico, and then migrate south for the winter.

After mating, the female whip-poor-will nests on the ground and lays two eggs on leaves. The female incubates the eggs. The male sometimes incubates, too. The eggs hatch in nineteen to twenty days. The female cares for the chicks, and the male brings them food at night. When the chicks are twenty days old, they can fly.

The female and male may breed again and produce a second clutch of two eggs. If the female is caring for the first brood, the male looks after the second clutch.

Whip-poor-wills and people: The whip-poor-will hides so well that people know the bird mainly by its call.

Conservation status: Whip-poor-wills are not in danger of extinction. ■



GRAY NIGHTJAR

Caprimulgus indicus

Physical characteristics: Gray nightjars are gray with other plumage coloring that includes brown, black, reddish brown, brownish yellow, and white. Birds range in length from 8.3 to 11.4 inches (21 to 29 centimeters). They weigh from 2.4 to 3.8 ounces (69 to 107 grams). The birds are also called jungle nightjars.

Geographic range: Gray nightjars breed in Asian countries including India, China, and Japan. Birds in the north migrate to Java in the winter. Gray nightjars were seen in Alaska in 2001.

Habitat: Gray nightjars live in rainforests, areas thick with trees and other growth. Birds also live in trees on farms and in other areas.

Diet: Gray nightjars eat insects.

Behavior and reproduction: The female gray nightjar lays two eggs on the ground. She incubates the clutch and may be helped by the male. The eggs hatch in sixteen to seventeen days. The young have reddish brown down (soft feathers). They grow feathers in approximately eighteen days.

Gray nightjars and people: Gray nightjars are rarely seen, but people hear them. The territorial song is said to sound like knocking.

Conservation status: Gray nightjars are not threatened, but are considered rare in India. ■

FOR MORE INFORMATION

Books:

Baicich, Paul J., and Colin J. O. Harrison. *A Guide to the Nests, Eggs and Nestlings of North American Birds*. San Diego, CA: Academic Press, 1997.

Sibley, David, Allen. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Stuart, Chris and Tilde. *Birds of Africa From Seabirds to Seed Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

Burt, William. "Nightjars Are Everywhere But Just Try Finding One." *Smithsonian* (July 2000): 74.

Web sites:

Global Registry of Migratory Species. http://131.220.109.5/groms/Species_HTMLs/Cindicus.html (accessed on May 29, 2004).

Williams, Ted. "Night Bard of Spring." National Audubon Society earth-almanac. <http://magazine.audubon.org/earthalmanac/almanac0405.html#night> (accessed on May 25, 2004).

SWIFTS AND HUMMINGBIRDS

Apodiformes

Class: Aves

Order: Apodiformes

Number of families 3 families

order

CHAPTER

phylum

class

subclass

● **order**

monotypic order

suborder

family

PHYSICAL CHARACTERISTICS

The name Apodiformes is based on the Greek words “a pous,” meaning “without foot.” Apodiforms have small feet and their legs are short. Many birds in this order cannot walk, and they are unable to escape quickly by simply walking and then flying away if they land on the ground.

Although their feet are weak, apodiforms are strong fliers because they have thick shoulder bones and long, powerful breast-bones. Because of their neck muscles, these birds can move their heads quickly.

Some physical differences and behavioral differences separate the three families in the Apodiformes order. A family is a group of birds that have similar characteristics.

Birds in the swift family (Apodidae) eat, mate, and sleep in the air. These birds, also called typical swifts, have long, pointed wings. Their head-to-tail length ranges from 3.4 to 9.6 inches (9 to 25 centimeters). They can weigh from 0.2 to 7.6 ounces (5 to 205 grams). The swift has a short bill and a large gape, which is the width of the mouth when it is open. The swift opens its mouth to catch prey, or insects hunted for food.

Swifts’ feathers are brown or black, with white patterns in some birds. Male and female birds have similar plumage (feather color).

Tree swifts belong to the Hemiprocnidae family. Unlike swifts, these birds can perch in trees. Birds range in length from 5.8 to 11.5 inches (15 to 30 centimeters), and weigh from 0.8 to 2.9 ounces (21 to 79 grams). Tree swifts have small, flat

bills, large gapes, and whiskers. They have long wings and forked tails.

Tree swifts are also called crested swifts because of the crest (clump of feathers) on their foreheads. Plumage is brown or light gray, other colors may include blue, green, and white. The plumage color of the male and female birds differs.

Hummingbirds belong to the Trochilidae family. They are named for the humming sound made by their quickly vibrating wings. Hummingbirds can fly backwards and hover, staying in one place by flapping their wings.

Hummingbirds range in length from 2 to 8.7 inches (5 to 22 centimeters), and weigh from 0.07 to 0.7 ounces (1.9 to 21 grams). These birds have long, thin bills and long, forked tongues.

The hummingbird family is the most colorful member of the Apodiforme family. Plumage colors include red, green, pink, blue, yellow, and purple. Usually, female birds are less colorful than males, which helps the females hide their young from predators, animals that hunt prey for food.

GEOGRAPHIC RANGE

Swifts are found throughout most of the world. They live on every continent except Antarctica and do not live in polar regions.

Tree swifts can be found in India, Sri Lanka, Bangladesh, Thailand, Cambodia, Vietnam, Malaysia, Sumatra, Borneo, the Philippines, Indonesia, New Guinea, Bismarck, and the Solomon Islands.

Hummingbirds live in the United States, Canada, Central American countries including Costa Rica and Guatemala, South American countries including Venezuela and Brazil, and the Caribbean Islands.

HABITAT

Swifts and hummingbirds live in coniferous forests that do not undergo seasonal changes. They also live in deciduous forests where trees lose their leaves during cold or dry weather. Hummingbirds live in deserts, and members of both families inhabit grassland areas where there are few trees. Hummingbirds also live in wetlands, areas where the land is low and wet.

Tree swifts live in rainforests, areas where heavy rain produces abundant growth.

Members of all three families live in trees. Swifts sometimes make nests in chimneys and on cliffs. Some hummingbirds and swiftlets live in caves. In addition, some swifts and hummingbirds migrate, traveling to another area where food is more plentiful. The chimney swift lives in North America and spends its winters in Central and South America.

DIET

Swifts and tree swifts are insectivores, birds that eat insects. Swifts catch most prey while flying with their mouths open. The type of insects eaten depends on where the swifts are and the weather. On warm days, there are more insects in the air. Swifts' prey includes mayflies, termites, and ants, and sometimes even spiders.

Tree swifts perch in trees and watch for prey, such as flies, bugs, and ants. They fly after prey and after catching it, they swallow it whole.

Hummingbirds use their long tongues to drink nectar, a sweet liquid found in flowers. Since hummingbirds live in many countries around the world, members of this family drink nectar from thousands of different flowers. Hummingbirds are likely to feed on flowers that are red, orange, and yellow. The birds may also eat insects.

BEHAVIOR AND REPRODUCTION

Swifts are sociable and live in large groups of birds called colonies. Tree swifts are usually found alone or in pairs. They may, however, form a group of ten to twelve individuals. Both birds, swifts and tree swifts, are noisy birds and may create quite a bit of noise when congregating.

Hummingbirds are solitary, pairing up only to breed. Male hummingbirds are territorial and chase other birds away from the area where they feed. When food is scarce, swifts and hummingbirds may hibernate.

Swifts and hummingbirds are active during the day. Tree swifts are crepuscular (kri-PUS-kyuh-lur), meaning that they become active at twilight or just before sunrise.

Apodiformes use various materials for their nests. The birds "glue" their nests together with saliva, a watery solution in their mouths, thereby hardening and holding the nest. Swifts make nests out of twigs, feathers, and other materials that they catch as it floats through the air. Tree swifts use feathers and bark

from trees for their nests. Hummingbirds weave spider webs into their nests.

Collocalia swiftlets in Asia use only saliva to make their nests. People eat these nests in bird's nest soup.

Swifts and tree swifts are monogamous (muh-NAH-guh-mus), meaning that they mate with only one partner. Hummingbirds are polygamous (puh-LIH-guh-mus) and do not mate with the same partner, but instead have a number of different partners. After mating, the male hummingbird leaves and the female lays two eggs.

The tree swift lays one egg, while the swift lays a clutch of one to six eggs. Males from both families help care for the young.

Swifts spend so much time in the air that they are usually safe from mammal predators. The birds fly rapidly, but sometimes are caught by hawks. In addition, brown tree snakes eat swifts on some islands.

SWIFTS, HUMMINGBIRDS, AND PEOPLE

For thousands of years, people in Asia have used cave swiftlet nests as the main ingredient for bird's nest soup. There is no known significant relationship between people and tree swifts.

People place hummingbird feeders in their yards because they enjoy watching them fly about and drink flower nectar. The birds pollinate the flowers when they drink the nectar, by transferring flower pollen (male sex cells) from the stamen to the pistil, the organ that bears the seeds. This eventually leads to the production of more flowers.

CONSERVATION STATUS

Some species of swifts and hummingbirds face threats to their survival, according to the World Conservation Union (IUCN). Nine hummingbird species are Critically Endangered, facing an extremely high risk of extinction, as their habitat is lost due to development, farming, and logging. Six hummingbird and swift species are Endangered, facing a very high risk of extinction. Brown tree snakes accidentally brought to Guam by ships ate



FLIGHT PATTERNS OF MIGRATING BIRDS

Migratory swifts and hummingbirds fly great distances, often without stopping until they reach winter homes where there is more food. In the wild, swifts may travel at a speed of more than 100 miles (160 kilometers) per hour. The smaller hummingbirds timed in laboratories flew at speeds ranging from 30 to 53 miles (48 to 85 kilometers) per hour.

Swifts alternate between wing movement and gliding, allowing the wind to assist in moving them along. Hummingbirds can stop in mid-air by flapping their wings up and down, allowing them to hover and feed.

many of these birds on the island. Other swiftlets died when pesticides were sprayed to kill insects.

FOR MORE INFORMATION

Books:

Attenborough, David. *The Life of Birds*. Princeton, NJ: Princeton University Press, 1998.

Baich, Paul J., and Colin J. O. Harrison. *A Guide to the Nests, Eggs and Nestlings of North American Birds*. San Diego, CA: Academic Press, 1997.

Sibley, David, Allen. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Wells, Diana. *100 Birds and How They Got Their Names*. Chapel Hill, NC: Algonquin Books, 2002.

family CHAPTER

SWIFTS Apodidae

Class: Aves

Order: Apodiformes

Family: Apodidae

Number of species: 99 species

PHYSICAL CHARACTERISTICS

Swifts are aerial birds, meaning that they spend much of their lives in the air. Birds eat, drink, mate, and are believed to sleep while flying. Swifts are powerful flyers because they have strong breast muscles and long wings that are large and narrow. Their legs and feet are so small that they cannot walk. When swifts are on the ground, they are unable to quickly take off and fly. As a result, swifts land on tall trees or structures like chimneys. Swifts cling to surfaces by using their four strong toes on each foot.

The head to-tail length of swifts ranges from 3.4 to 9.6 inches (9 to 25 centimeters), and they can weigh from 0.2 to 7.6 ounces (5 to 205 grams). Most birds have black feathers, with some brown and blue coloration. Some birds have white rumps, chests, and bellies. Male and female birds have similar plumage (feathers).

The swift has a narrow body and a large head with large eyes. The bird has a short bill and a large gape, which is the width of the open mouth. The gape, being as large as the swift's head, allows it to catch and swallow insects while flying.

The word "swift" means fast, and swifts can fly at a speed of more than 100 miles (160 kilometers) per hour!

GEOGRAPHIC RANGE

Swifts are found throughout most of the world, on every continent except Antarctica.

HABITAT

Swifts' habitats vary from coniferous and deciduous forests to grasslands where there are few trees.

phylum

class

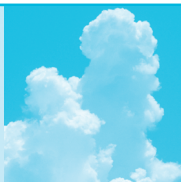
subclass

order

monotypic order

suborder

▲ family



WAITING OUT THE BAD WEATHER

Swifts depend on the weather for their food supply. They rely on breezes to blow insects in their direction. During a storm, rain washes the insects away, depleting the swifts' food supply. Cold weather also decreases the number of insects for the birds to feed on. For swift nestlings too young to fly, the solution is becoming torpid. Nestlings enter torpor, a state in which their body temperature drops and their heartbeat slows. In this state, birds can go for ten days without food.

Swifts need to build nests in locations where it is easy for them to take flight. Swiftlets build nests in caves. Some birds make nests on cliffs, in chimneys or other tall structures.

DIET

Swifts are insectivores, animals that eat insects. Flying swifts catch and eat insects including flies, ants, beetles, and sometimes spiders. Adults eat one to three times an hour, and some birds eat ten thousand insects a day.

BEHAVIOR AND REPRODUCTION

Swifts become active at dawn. They are noisy and live in large groups called colonies. Some species migrate, flying from an area with harsh winter weather to a warmer climate where there is a larger food supply.

Swifts are monogamous (muh-NAH-guh-mus), mating with one partner. Birds make nests out of twigs, feathers, and items they find while flying. To hold the material together, swifts use their saliva, the liquid solution in their mouths, which hardens around the nest material.

The female swift lays one to six eggs. Both parents incubate the eggs, sitting on them to keep them warm in order for them to hatch. Eggs hatch in nineteen to twenty-eight days. Both parents feed the young. Other swifts, called cooperative breeders, may assist the parents in feeding. The adults carry insects for the young in pouches located below their tongues.

Cave swiftlets use only saliva when building their nests. People in Asia take the nests of some swiftlets and use them as the main ingredient in bird's nest soup. Since caves are dark, cave swiftlets use echolocation (eck-oh-loh-KAY-shun) to guide them as they move around in the caves. The birds make a sound and listen to the echoes that bounce off the surfaces.

SWIFTS AND PEOPLE

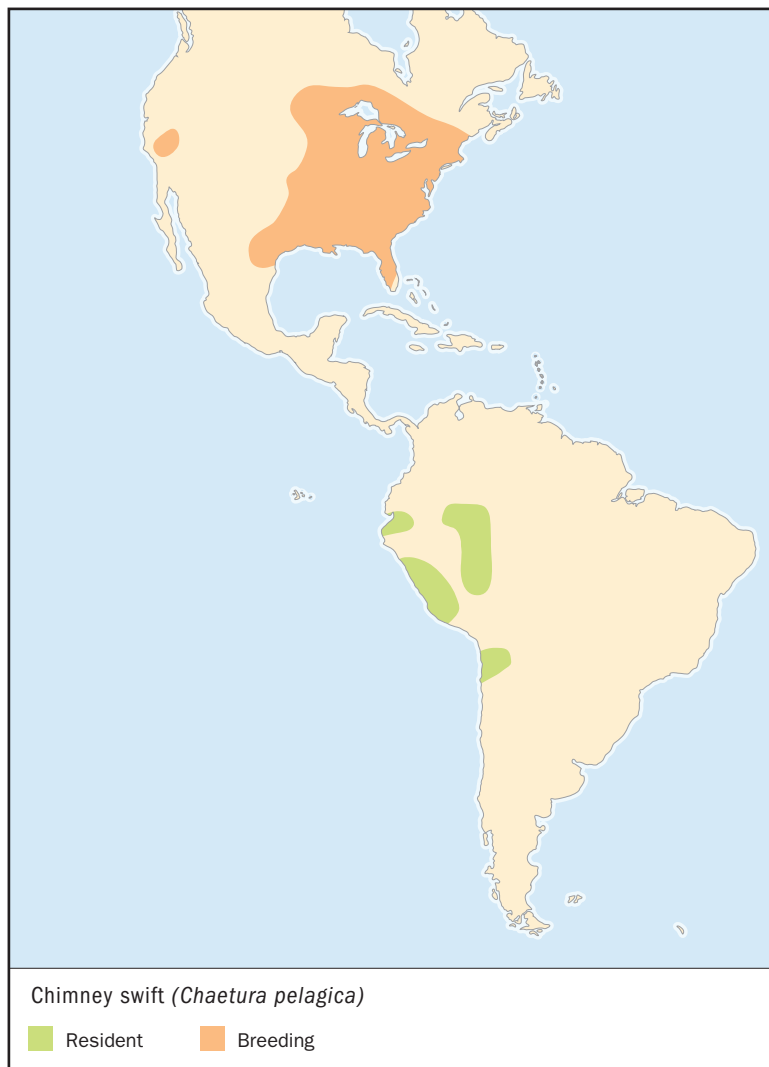
People harvest swiftlet nests for use in bird's nest soup. Bird watchers enjoy watching colonies of swifts fly across the sky. Some people track their migration and report the birds' progress on the Internet.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists several species as threatened. The Guam swiftlet is Endangered, facing a very high risk of extinction, dying out. The bird population dropped by 80 percent after birds were killed by pesticides, chemicals that were sprayed to eliminate insects. Their populations have also declined due to being preyed on by the brown tree snake, a species introduced to Guam from ships by accident. The birds, being unable to take flight quickly from the ground, were vulnerable to this ground-dwelling snake.

IUCN ranks some swift species as Vulnerable, facing a high risk of extinction. Low populations make the dark-rumped swift, Aitu swiftlet, and the Polynesian swiftlet Vulnerable. Loss of habitat as trees are cut down makes the Congo swift Vulnerable. The Seychelles swiftlet is Vulnerable because birds nest at only three locations.

SPECIES ACCOUNTS



CHIMNEY SWIFT *Chaetura pelagica*

Physical characteristics: The chimney swift is often described as a “cigar with wings.” The swift’s cylindrical body looks like a cigar. Its plumage is sooty brown (black-brown), and its underparts are gray-brown. The bird’s wings are slightly curved and the tail only shows when it is spread.



Chimney swifts build their nests in empty chimneys, silos, well shafts, and building attics. (© Ron Austing/Photo Researchers, Inc. Reproduced by permission.)

Chimney swifts range in length from 4.6 to 5.4 inches (12 to 14 centimeters), and weigh from 0.8 to 1.0 ounces (20 to 23 grams).

Geographic range: Chimney swifts live and breed in the United States and Canada. They are found east of the Rocky Mountains in both countries. The swifts migrate through Central America and spend winters in South American countries including Peru and Chile.

Habitat: Chimney swifts live in forests and in cities. Birds once nested in hollow trees, but they now build nests in empty chimneys, well shafts, silos, and sometimes in building attics. Nests are located just below the opening of the structure.

Diet: Chimney swifts eat flying insects such as flies, ants, and beetles. They sometimes eat spiders.

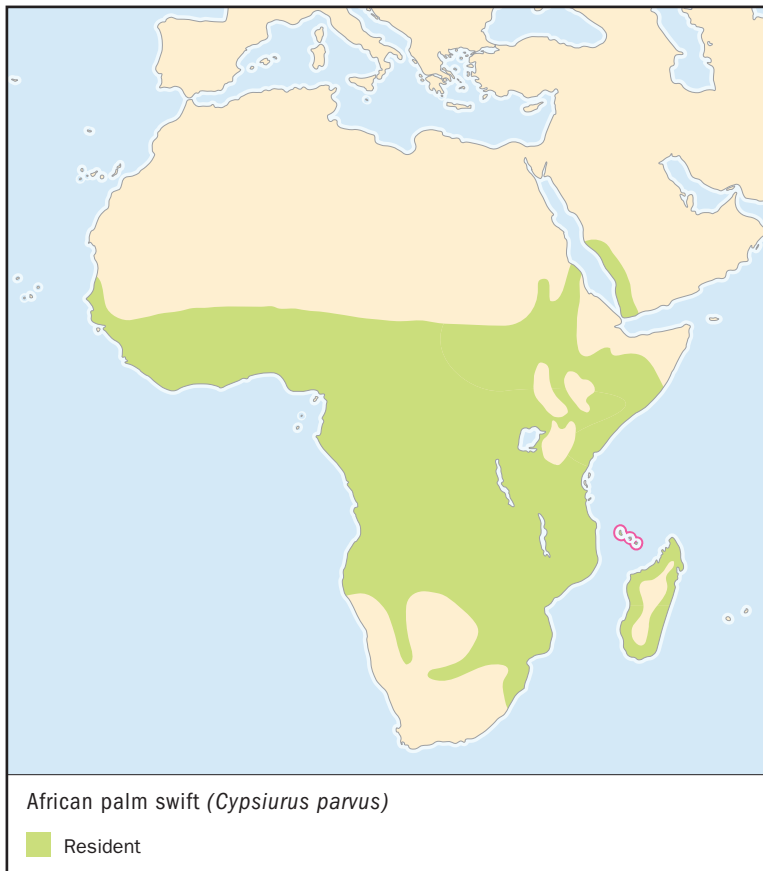
Behavior and reproduction: Chimney swifts are sociable and travel with a colony. Birds may stay in the air until they are ready to nest.

These birds are monogamous. In the nesting season, chimney swifts build nests with twigs that they break from trees. They use saliva to attach the nest vertically (with the opening lengthwise) to the side of a hollow tree or chimney.

The female lays two to seven eggs between May and July, and the eggs hatch within nineteen to twenty-one days. Chicks fledge (grow flying feathers) in twenty-eight to thirty days. The young swifts may leave the nest a week before growing their feathers.

Chimney swifts and people: People have long watched the swifts fly south for the winter. In addition, the North American Chimney Swift Nest Research Project in Texas is tracking the birds' migration. The group wants to develop towers where swifts can roost.

Conservation status: Chimney swifts are not in danger of dying out. ■



AFRICAN PALM SWIFT

Cypsiurus parvus

Physical characteristics: The African palm swift is about 6.1 inches long (16 centimeters) and weighs from 0.4 to 0.5 ounces (10 to 14 grams). The palm swift has gray-brown plumage. The head and wings are darker than the pale under parts, and some birds have streaks of color on their throats. In male birds the throat is whiter than in female swifts.

Geographic range: African palm swifts live in sub-Saharan Africa, south of the Sahara Desert. These nations include Namibia, Madagascar, and South Africa.

Habitat: African palm swifts live in grassland and other areas where there are palm trees. Birds build nests on the underside of palm leaves, and sometimes on structures like bridges.

Diet: African palm swifts eat insects, flying ants, beetles, termites, and spiders.

Behavior and reproduction: African palm swifts are active during the daytime and return at sunset to their nests in the leaves of palm trees. Birds mate and nest on the underside (back) of palm fronds.

These swifts build nests with feathers that they collect while flying, and use saliva to attach the feathers to the palm. The nest is a vertical platform.

During the night, the male and female birds roost (rest). They hold onto the nest with their toes when they mate.

The female goes to the top of the platform to lay eggs. After laying an egg, she pushes it into the nest and “glues” it to the palm leaf with her saliva. She then lays another egg and repeats the process.

The female lays a clutch of one to three eggs. The eggs hatch in about twenty days. Young palm swifts fledge, or grow feathers in thirty-one to thirty-three days.

Risks to palm swifts include loss of habitat when people strip (remove) palm leaves.

African palm swifts and people: African palm swifts eat insects that people regard as pests, and the birds are a tourist attraction in Namibia.

Conservation status: African palm swifts are not in danger of extinction. ■

FOR MORE INFORMATION

Books:

Attenborough, David. *The Life of Birds*. Princeton, NJ: Princeton University Press, 1998.

Baich, Paul J., and Colin J. O. Harrison. *A Guide to the Nests, Eggs and Nestlings of North American Birds*. San Diego, CA: Academic Press, 1997.

Sibley, David Allen. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Wells, Diana. *100 Birds and How They Got Their Names*. Chapel Hill, NC: Algonquin Books, 2002.

Web sites:

North American Chimney Swift Nest Research Project. <http://www.concentric.net/~dwa/page6.html> (accessed on May 26, 2004).

“Palm Stripping Destroys Swifts’ Nesting Places.” *The Free Press of Namibia* (February 27, 2003) Online at <http://www.namibian.com.na/2003/February/environment/03B8B156C8.html> (accessed on May 26, 2004).

TREE SWIFTS

Hemiprocnidae

Class: Aves

Order: Apodiformes

Family: Hemiprocnidae

Number of species: 4 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The head-to-tail length of tree swifts ranges from 5.8 to 11.5 inches (15 to 30 centimeters). Birds weigh from 0.8 to 2.9 ounces (21 to 79 grams). Tree swifts have long wings and tails that are forked and divided into two sections so that they resemble the letter V turned on its side. Tree swifts fly quickly when hunting food, but they live in one area and usually do not migrate.

Tree swifts belong to the Apodiformes order that also includes swifts and hummingbirds. While all the birds share some physical characteristics, swifts and hummingbirds have weak feet and do little perching, sitting or standing on a surface. Instead, they spend much of their time in the air. Tree swifts have stronger legs and are able to perch in trees.

Swifts have mostly gray plumage, feathers. Tree swifts and hummingbirds are more colorful. Tree swifts have patches of color in their plumage. Some birds have whiskers. Other birds have a crest, a group of feathers that stand upright on their foreheads.

Some species characteristics are described by the birds' names. The crested tree swift has a crest. The gray-rumped tree swift has gray plumage on its rump. The moustached tree swift has a white "moustache," white plumage that extends from the chin to the back of the neck. The whiskered tree swift has long feathers that extend from the face like whiskers. The bird is also known as the lesser tree swift.

GEOGRAPHIC RANGE

Tree swifts live in Asia in the countries of India, Nepal, Sri Lanka, Malaysia, Bangladesh, Myanmar, Thailand, Bali, China, Cambodia, and Vietnam. They also range in New Guinea, Bismarck, the Philippines, and the Solomon Islands.

HABITAT

Tree swifts live in various types of tree habitats. They live in forests with deciduous trees that lose their leaves during cold or very dry seasons. Tree swifts also live in forests with coniferous or evergreen trees that generally stay green all winter. They range in rainforests where abundant rainfall produces a lot of growth. The birds also range in grassland areas called savannas where there are fewer trees and grasses grow. They range near forest openings and are sometimes found near the edge of rivers. Some species also live in towns and are found in gardens.

DIET

Tree swifts eat flying insects like ants, beetles, wasps, and bees. Tree swifts are aerial feeders; they fly after prey, insects hunted for food. The birds also eat spiders.

BEHAVIOR AND REPRODUCTION

Tree swifts are usually sedentary, staying in one area throughout the year. Birds roost, rest, during the daytime and perch standing up on branches. Tree swifts are crepuscular (kri-PUS-kyuh-lur) and nocturnal; they become active at twilight or in the evening.

Tree swifts form small groups, but they have been seen in flocks of up to fifty gray-rumped tree swifts. Birds flock to chase flying insects.

Tree swifts are monogamous (muh-NAH-guh-mus), they have only one mate. Tree swifts build tiny nests out of feathers and pieces of bark. Like other Apodiformes, tree swifts build nests with saliva, the watery liquid in their mouths. Their saliva hardens as it dries, so swifts use saliva to glue the saucer-shaped



SOCIAL SWIFT SPECIES

Some tree swift species are more social than others. Crested tree swifts form groups of six to twelve birds. They have little to do with other species. Whiskered tree swifts may be alone, in pairs, or in groups of six birds. However, the whiskered birds do not mind sharing their tree with gray-rumped tree swifts. Gray-rumped tree swifts just perch higher in the trees, which probably helps the two species get along.

nest together. The female lays one egg. Both parents incubate the egg, keeping it warm, until it hatches after approximately three weeks. Birds fledge, grow feathers needed for flight, about three weeks later.

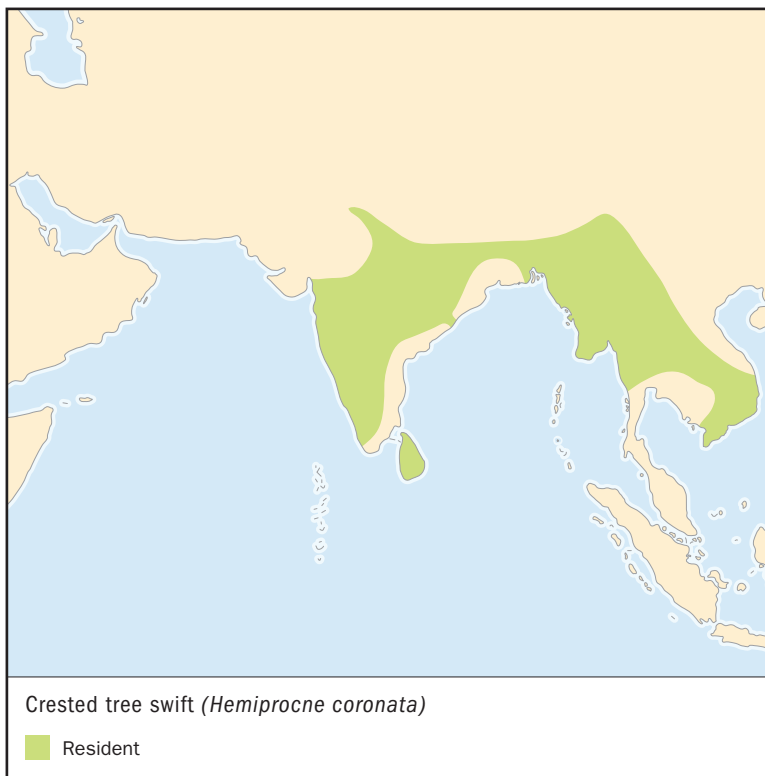
Predators that hunt tree swifts for food include snakes and larger birds.

TREE SWIFTS AND PEOPLE

People enjoy watching flocks of tree swifts. Gray-rumped birds are active at dusk and can be seen flying down to drink from pools and other bodies of water.

CONSERVATION STATUS

Tree swifts are not in danger of extinction, dying out.



CRESTED TREE SWIFT

Hemiprocne coronata

SPECIES ACCOUNT

Physical characteristics: Crested tree swifts range in length from 8.2 to 9 inches (21 to 22.6 centimeters) and weigh 0.7 to 1.0 ounces (20 to 26 grams). They have long, narrow wings and forked tails. All birds have blue-gray plumage, green-blue crests on their foreheads, and coloring that looks like black eye patches.

Male crested tree swifts have a pale rufous, brownish red, patch below the eye. That coloring extends to ear coverts, small feathers near the ears. On male bodies, feathers are white below the breasts. Wings are mainly blackish brown. Some wing feathers are pale gray and blue. Tails are blue-gray on top and pale gray on the back side.

Female crested tree swifts have black plumage in the area between their eyes and bills. That black coloring extends to their ear coverts. Below the black plumage is a thin line of white plumage that looks



Crested tree swifts live in forests and gardens in Southeast Asia. (Illustration by Bruce Worden. Reproduced by permission.)

like a moustache. The line extends from the face to the sides of the head below the ears. Female crested tree swifts have dark gray throats.

Crested tree swifts were once thought to belong to the same species as the gray-rumped tree swift. However, the crested swifts do not have pale gray plumage on their rumps.

Geographic range: Crested tree swifts live in India, Nepal, Sri Lanka, Bangladesh, Myanmar, Thailand, China, Cambodia, and Vietnam.

Habitat: Crested tree swifts live in deciduous forests, in open areas near trees, and in home gardens. Most birds live in areas with altitudes, heights, of no more than 1,197 feet (365 meters). However, birds also range at higher altitudes of 3,937 to 4,593 feet (1,200 to 1,400 meters).

Diet: Crested tree swifts eat flying insects like the small, two-winged midge.

Behavior and reproduction: While crested tree swifts are sedentary, don't migrate, the birds in India sometimes fly to different parts of the country when seasons change. Crested tree swifts are nocturnal and are active in the later part of the night. Birds look for food in pairs or in small groups of

six to twelve birds. They fly in circles to feed, and their call is described as harsh.

Crested tree swifts often perch upright on branches with no leaves. They have favorite perches and stand with the tips of their wings crossed.

The breeding season varies by location, but birds usually mate between December and July. The male and female birds build a tiny nest out of pieces of bark, feathers, and saliva. Birds attach the nest to a branch with saliva, and the female lays one gray egg. Both parents incubate the egg. They do this by perching upright and covering the egg with their feathers.

The egg hatches after about three weeks. Both parents care for the chick. The young bird fledges approximately fifty days after the egg was laid.

Crested tree swifts and people: Since the crested tree swift population is large and found in many countries, they are often studied to learn more about the family.

Conservation status: Crested tree swifts are not at risk of extinction. ■

FOR MORE INFORMATION

Books:

Ali, Sálim. *The Book of Indian Birds*. Oxford, U.K.: Oxford University Press, 1996.

Chantler, Phil. *Swifts: A Guide to the Swifts and Tree Swifts of the World*, 2nd ed. New Haven, CT: Yale University Press, 2000.

Kennedy, Robert S., et al. *A Guide to the Birds of the Philippines*. Oxford, U.K.: Oxford University Press, 2000.

Robson, Craig. *Birds of Thailand*. Princeton, NJ: Princeton University Press, 2002.

Web sites:

Lockwood, Burleigh. "Apodiformes." Chaffee Zoological Gardens of Fresno. <http://www.chaffeezoo.org/animals/apodiformes.html> (accessed on June 25, 2004).

HUMMINGBIRDS

Trochilidae

Class: Aves

Order: Apodiformes

Family: Trochilidae

Number of species: 328 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Hummingbirds received their name because of the humming sound their wings make. They have powerful wings and can fly backwards, upside down, and quickly change direction. Hummingbirds hover when feeding, remaining motionless in the air. They feed by dipping their long bills and long, forked tongues into flowers.

Hummingbirds range in size from the bee hummingbird, which is 2.25 inches (5.7 centimeters) long, to the giant hummingbird, which is 8.5 inches (21.6 centimeters) long.

Hummingbirds are sometimes called “flying jewels” because of their colorful plumage, feathers. Some feathers are iridescent, which means the colors appear to change depending on where light shines on the plumage. Males are usually more colorful than females. Plainer coloring helps the female stay hidden from predators that would hunt the female and young.

GEOGRAPHIC RANGE

Hummingbirds live in North, Central, and South America.

HABITAT

Hummingbirds live in coniferous forests where trees do not undergo seasonal change. They range in rainforests where year-round rain produces abundant growth and in deciduous forests where trees shed leaves during certain seasons. They are also found in grasslands, deserts, and wetlands like swamps.

DIET

Hummingbirds drink nectar, a sweet liquid inside flowers. They are attracted to red, orange, and yellow flowers. When hummingbirds feed, they pollinate flowers. Pollination is the transfer of flower pollen, the male sex cells, from the stamen to the pistil, the organ that bears seeds. This transfer allows seeds to form and new flowers to grow. Hummingbirds pollinate thousands of flowering plants.

Hummingbirds also eat insects. The size of this prey, creature hunted for food, depends on the size of the hummingbird.

BEHAVIOR AND REPRODUCTION

Hummingbirds are active during the day. They are solitary, alone, pairing up only to breed. The birds are polygamous (puh-LIH-guh-mus), having more than one mate at the same time. After the birds mate, the male leaves. The female lays one to two eggs. The female incubates, sits on, the eggs to keep them warm. Eggs hatch in two to three weeks, and young birds leave the nest three weeks later.

Some hummingbirds are territorial and chase other birds away from their feeding area. Cold weather causes hummingbirds to enter torpor, a type of hibernation in which their heartbeat and other body functions slow down.

HUMMINGBIRDS AND PEOPLE

For centuries, hummingbirds have fascinated people. In Latin America, people once thought the sun disguised itself as a hummingbird. In some countries, people thought they would find romance or wealth if they used a powder made of hummingbird bodies. Europeans used to decorate hats with hummingbird feathers.

During the twentieth century, laws were passed to protect hummingbirds, and modern people appreciate the beauty of the “flying jewels.”

CONSERVATION STATUS

Nine hummingbird species are listed by the World Conservation Union (IUCN) as Critically Endangered, facing an extremely high risk of extinction, dying out, in the wild. Eleven species are Endangered, facing a very high risk of extinction in the wild, and nine are Vulnerable, facing a high risk of extinction. Threats to hummingbirds include loss of habitat as trees are cut down for lumber or land is used for farming.

SPECIES ACCOUNTS



HAIRY HERMIT *Glaucis hirsuta*

Physical characteristics: Hairy hermits are also called rufous-breasted hermits. Rufous is the reddish brown color on the hummingbirds' chests and lower feathers. Upper feathers are green. Males have darker chests, and their wings are longer than female birds. All birds' bills curve down, but males' bills curve more.

Hairy hermits measure 4 to 4.7 inches (10 to 12 centimeters). Males weigh 0.21 to 0.28 ounces (6 to 8 grams). Females weigh from 0.19 to 0.26 ounces (5.5 to 7.5 grams).

Geographic range: Hairy hermits live in South America and are found in countries including Brazil, Peru, Venezuela, Suriname, Panama, Colombia, Trinidad and Tobago.

Habitat: Hairy hermits live in rainforests, other wooded areas, and wetland.

Diet: Birds drink nectar and sometimes eat small spiders.

Behavior and reproduction: Hairy hermits are solitary unless breeding. During the day the birds eat. They also bathe by hovering close to water and then diving in partly or all the way.

Hairy hermits are trapliners, they look for food in a large area instead of a small territory. Trapliners usually follow a regular route, line, to flowers, their traps.

During the breeding season, males form a lek, a group of up to twelve birds. Males sing so that females will choose them for mating. After breeding, the male leaves. The female flies to a nest located under leaves, hidden from predators like snakes and larger birds.

The cone-shaped nest is made of plant material. The female lays two eggs. Sometimes two females will share a nest, so there may be more eggs in the nest. The female incubates the eggs, which hatch after seventeen to nineteen days. Chicks are black with gray down, soft “baby” feathers. Birds fledge, growing feathers needed for flight, in twenty to twenty-five days. Fledglings stay with their mother for three to four weeks.

The breeding season varies by location. Birds mate in September through May in Brazil and from January to July in Trinidad.

Hairy hermits and people: People travel to see hairy hermits in places like Machu Picchu, the ruins of an ancient city in Peru.

Conservation status: Hairy hermits are not threatened with extinction. ■



Hairy hermits mostly drink nectar, but may also eat small spiders. (Illustration by Patricia Ferrer. Reproduced by permission.)



SPARKLING VIOLET-EAR

Colibri coruscans

Physical characteristics: Sparkling violet-ears are part of a genus (JEE-nus), group of animals with similar characteristics, of hummingbirds named for the bluish purple color of feathers near their ears. These large feathers are long and stiff. The sparkling violet-ear's upper body feathers are metallic green. Lower feathers are green, and the bird has a blue stomach. The tail is iridescent green with a blue band.

Male and female birds have similar coloring. Birds range in length from 5.1 to 5.5 inches (13 to 14 centimeters). This length includes

the tail that is about 2.2 inches (6 centimeters) long. The hummingbird's black bill curves down and is approximately 1 inch (2.5 meters) long.

Male birds weigh 0.27 to 0.3 ounces (7.7 to 8.5 grams). Females weigh from 0.24 to 0.26 ounces (6.7 to 7.5 grams).

Geographic range: Sparkling violet-ears live in Argentina, Bolivia, Brazil, Chile, Colombia, Guyana, Peru, and Venezuela.

Habitat: Sparkling violet-ears live near coniferous or evergreen eucalyptus forests, gardens, and plains areas.

Diet: Sparkling violet-ears drink nectar. These birds will also catch and eat insects in flight.

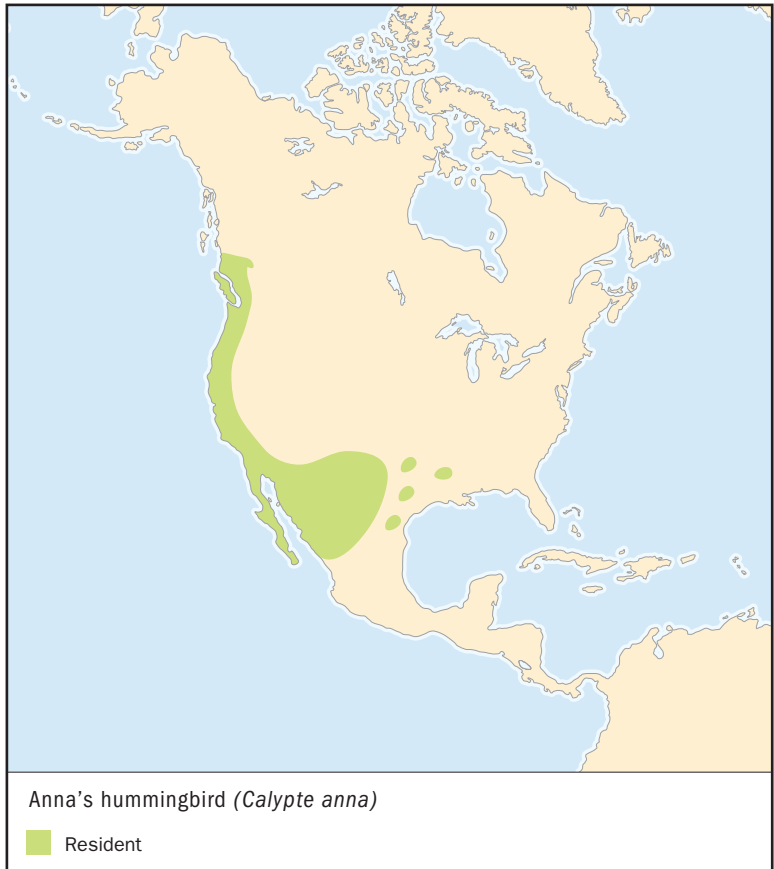
Behavior and reproduction: Sparkling violet-ears are solitary and aggressive. Birds declare their territory by singing. The birds sing much of the day, and sub-groups develop their own calls.

Breeding seasons vary by region. Birds in Venezuela mate from July through October. Birds find mates at leks, areas where groups of males try to attract a female to mate. After mating, the male leaves. The female lays two eggs in a tiny, cup-shaped nest made of twigs and other plant material. Eggs hatch in seventeen to eighteen days. The young fledge in three weeks.

According to reports, male sparkling violet-ears were seen twice caring for their young. Normally, male hummingbirds have little to do with their young.

Sparkling violet-ears and people: People travel to Latin America to see and photograph sparkling violet-ears.

Conservation status: Sparkling violet-ears are not in danger of extinction. ■



ANNA'S HUMMINGBIRD

Calypte anna

Physical characteristics: Anna's hummingbirds have tube-shaped bodies, long foreheads, and short, straight bills. All birds have green feathers. The male has a black bill, and a red crown, top of the head, and throat. The female has a gray head. The male has gray tail feathers; there are white tips on the female's tail feathers.

Birds range in length from 3.9 to 4.3 inches (10 to 11 centimeters). Males weigh from 0.12 to 0.2 ounces (3.5 to 5.8 grams). Females weigh from 0.12 to 0.17 ounces (3.3 to 4.7 grams).

This hummingbird was named for the wife of a nineteenth-century bird collector, Duke Victor Massena.



The female Anna's hummingbird takes care of her young without the male's help. The nest is made of material including leaves, feathers, and spider webs. (© George D. Lepp/Photo Researchers, Inc. Reproduced by permission.)

Geographic range: Anna's hummingbirds range in southwest Canada, the western United States, and northwest Mexico. Birds migrate during the winter, traveling south from locations such as Oregon to Arizona and Mexico.

Habitat: Birds live in forests, grasslands, and in towns and neighborhoods near gardens and parks.

Diet: Anna's hummingbirds drink nectar. They eat flies, wasps, bees, spiders, and insects. Hummingbirds take prey off plants or catch it while flying.

Behavior and reproduction: Anna's hummingbirds are solitary, and males defend their territory. The breeding season lasts from November to May, sometimes extending to July. During that time, the female may have two or three broods, groups of young birds hatched at the same time.

The male leaves after mating. The female lays two eggs in a nest located on the branch of a tree or bush. The nest is made of material including leaves, feathers, and spider webs. The female incubates the eggs that hatch in fourteen to nineteen days. The birds fledge in eighteen to twenty-six days.

Anna's hummingbirds and people: Many people in North America put feeders containing sugar water in their yards so they can watch Anna's hummingbirds.

Conservation status: Anna's hummingbirds are not threatened with extinction. ■

FOR MORE INFORMATION

Books:

Burton, Robert. *The World of the Hummingbird*. Kingston, Canada: Firefly Books, 2001.

Howell, Steve N.G. *Hummingbirds of North America*. San Diego, CA: Academic Press, 2002.

Periodicals:

Dunn, Terry. "Hummingbirds: Frantic and Fascinating." *Zoogoer* 31, no. 2 (2002). Online at <http://natzoo.si.edu/Publications/Zoogoer/2002/1/hummingbirds.cfm> (accessed on July 19, 2004).

Web sites:

"Hummingbird." San Diego Zoo.org Animal Bytes. <http://www.sandiegozoo.org/animalbytes/t-hummingbird.html> (accessed on June 24, 2004).

monotypic order

CHAPTER

MOUSEBIRDS

Coliiformes

Class: Aves

Order: Coliiformes

One family: Coliidae

Number of species: 6 species



PHYSICAL CHARACTERISTICS

The mousebird order received its name because the birds look like mice when they creep around on the ground and tree branches. Mousebirds have gray or brown plumage (feathers) and patches of other coloring. These birds, also known as colies (KOHl-eez), range in head-to-tail length from 10.2 to 15.7 inches (26 to 39.8 centimeters). Mousebirds' pointed tails make up more than half of that length.

Mousebirds have crests, clumps of feathers on their head. Birds have short red legs and feet. Mousebirds' small, curved bills are strong enough to break the skin off fruit.

GEOGRAPHIC RANGE

Mousebirds live in sub-Saharan Africa, in countries south of the Sahara Desert. Bar-breasted mousebirds range throughout most of that area. White-headed mousebirds live in Kenya and Tanzania. Chestnut-backed mousebirds live in the region of the Democratic Republic of the Congo and Angola. White-backed mousebirds and red-faced mousebirds live in southern Africa. Blue-naped mousebirds live in western, central, and eastern Africa.

HABITAT

Mousebirds live in forests where deciduous trees lose their leaves during dry or cold seasons. The birds live in grassland areas where there are fewer trees and grass grows. Some birds live in parks and in garden trees.

phylum

class

subclass

order

● **monotypic order**

suborder

family

DIET

Mousebirds eat fruit, flowers, leaves, and buds. They sometimes eat insects.

BEHAVIOR AND REPRODUCTION

Mousebirds are social and noisy. They live in flocks of six to twenty-four birds. The birds are sedentary, not usually migrating from one area to another. During the day, birds eat, drink water, and take dust baths. Mousebirds travel in flocks to feed. Some birds climb to the top of a tree or bush to begin their flights. Birds fly quickly and land by crashing head-first into plants.

At night, a group of twenty or more birds roost (rest) in a tree. When the temperature drops, the birds enter a form of hibernation called torpor.

Mousebirds divide into pairs to breed. The birds are monogamous (muh-NAH-guh-mus), and breed with the same partner. The mousebird is an asynchronous (ay-SIN-kruh-nus) breeder, one that doesn't lay all eggs at the same time. The female lays a clutch of two to five eggs. However, sometimes there are seven eggs in a nest. The additional eggs usually belong to another female sharing the nest.

Mousebirds usually build nests in hidden places like leaf-covered branches or in thick bushes. The birds sometimes locate their nests near the nests of wasps, insects that have painful stings. Wasps provide protection against predators like snakes and larger birds. These predators hunt mousebirds for food.

After mousebirds breed, the male and female incubate the eggs, sitting on eggs to keep them warm. The mousebird's community behavior can extend to breeding. The couple that mated may be helped by "helper" birds. This is called cooperative breeding. Sometimes other males help guard the nest. These helpers are often the older offspring of the parents.

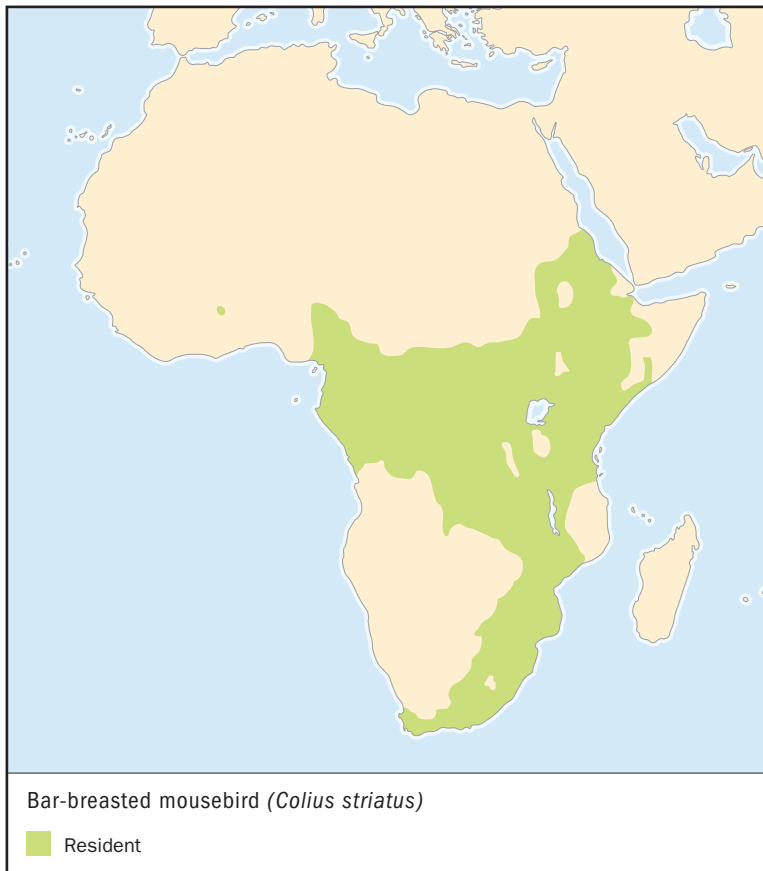
The eggs hatch in eleven to twelve days, and the birds fledge (grow flying feathers) within ten days to two weeks.

MOUSEBIRDS AND PEOPLE

Mousebirds damage trees, and that upsets people. They may poison or shoot the birds. Mousebirds sometimes die when pesticide is sprayed to kill insects. Not all birds are disliked; some people have bar-breasted mousebirds as cage birds.

CONSERVATION STATUS

Mousebirds are not in danger of extinction (dying out).



BAR-BREASTED MOUSEBIRD

Colius striatus

SPECIES ACCOUNT

Physical characteristics: Bar-breasted mousebirds, also called speckled mousebirds, have mostly brownish gray plumage, and their crests are the same color. The length of the long-tailed birds ranges from 10.2 to 14.2 inches (26 to 36 centimeters). Weight ranges from 1.3 to 2.8 ounces (36 to 80 grams).

The white-eared bar-breasted mousebirds of East Africa have white feathers on the sides of their heads. A subspecies in the northern range has a white spot on its upper mandible (jaw). Birds in one subspecies have bills that are black on top and pink on the bottom. Some groups of birds have white or blue marks on their bills.

Another difference is the color of the iris, the round part of the eye surrounding the pupil. Iris colors in subspecies include white, brown, and green. In addition, the iris may be two-toned, with the color above the pupil different from the color below it.

Geographic range: Bar-breasted mousebirds live in countries including Angola, Botswana, Cameroon, the Central African Republic, Eritrea, Ethiopia, Gabon, Mozambique, Nigeria, Somalia, Sudan, South Africa, Tanzania, Uganda, and Zimbabwe.

Habitat: Bar-breasted mousebirds live in grassland, deciduous forests, parks, gardens, and orchards where fruit trees grow.

Diet: Bar-breasted mousebirds eat fruit, berries, and plant buds and leaves. The type of food varies by habitat. Birds eat items native to an area along with fruits such as strawberries and tomatoes. The birds sometimes eat insects.

Behavior and reproduction: Bar-breasted mousebirds live in flocks of from six to thirty birds. The smaller group is usually a family of birds. Larger flocks consist of birds that look for food together and spend nights in the same trees. During the day, mousebirds feed and bathe. They also preen, cleaning their feathers with their beaks. At night, the flock roosts in tree branches.

Bar-breasted mousebirds can breed throughout the year. When birds breed depends on factors such as whether food is available to feed the young. During this season, birds pair off. The female lays one to five eggs. Both parents incubate the eggs.

The breeding pair may be helped by other birds. These cooperative breeders help with incubation and feeding. The helpers consist of one to three young birds of the same sex. Males are older offspring of the parents; females may not be related.

Bar-breasted mousebird eggs hatch in about twelve days, and chicks have yellow tongues. After the birds fledge, the parents may breed again. A female can lay up to eight clutches in a year.

Since mousebirds live in groups, this provides some protection from predators. Automobile drivers are a greater danger to bar-breasted

mousebirds because the birds fly in a line one after the other. While flying in this pattern, drivers may accidentally kill the birds.

Bar-breasted mousebirds and people: People have various relationships with bar-breasted mousebirds. They sometimes resent the birds for ruining crops and taking fruit. People also admire the birds. The country of Gabon honored the bird with a 1992 stamp, and people in England bred captive mousebirds in 1912. Since then, people in countries including the United States keep bar-breasted mousebirds as cage, or captive, birds.

Conservation status: Bar-breasted mousebirds are not in danger of extinction. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Stuart, Chris and Tilde. *Birds of Africa From Seabirds to Seed Eaters*. Cambridge, MA: The MIT Press, 1999.

Periodicals:

McKechnie, Andrew E., and Barry G. Lovegrove. "Thermoregulation and the Energetic Significance of Clustering Behavior in the White-Backed Mousebird (*Colius colius*)."
Physiological and Biochemical Zoology (March 2001): 238.

Web sites:

Kenya Birds. "Speckled Mousebird." Kenya Birds. http://www.kenyabirds.org.uk/s_mbird.htm (accessed on June 8, 2004).

TROGONS

Trogoniformes

Class: Aves

Order: Trogoniformes

One family: Trogonidae

Number of species: 37 species



monotypic order

CHAPTER

phylum

class

subclass

order

● **monotypic order**

suborder

family

PHYSICAL CHARACTERISTICS

Trogons (TROH-gahnz) are medium-sized, compact, brightly plumaged (feathered) birds that live mostly in trees; possess thin, delicate skin; soft and dense plumage; short necks; short, heavy, broad-hooked bills; short, rounded wings; long, broadly squared tails; and small, weak legs and feet. They are 9 to 16 inches (23 to 41 centimeters) long (excluding the tail streamer, the central part of the tail that is extra-long) and weigh between 1.2 and 7.3 ounces (35 and 210 grams).

Broad bills and weak legs are due to the trogon diet and arboreal (tree living) habits. In some species, bills are not curved but have serrated (saw blade-like) cutting edges. Trogon feet are described as heterodactyl (het-ur-oh-DAK-tuhl), with the first and second inner front toes turned backward and the third and fourth toes turned forward. This unusual toe arrangement allows them to cling vertically to trees. Their weak feet are unable to turn without the help of their wings.

Adult males are among the most brilliantly colored of all tropical birds. Their plumage is a brilliant green with some yellow, blue, or violet on the upper body, head, breast, and back; and yellow, orange, pink, or carmine (deep red) on the belly. Since trogon skin is delicate, feathers are easily lost. Central tails are long and broad, and hide three outer feathers usually with black or white bars; the outer feathers can be twice the length of inner tails. Females are duller in appearance, with browns and grays replacing the blues and greens of males. Female under parts, however, are often as brightly colored as those of males. Many

trogons have distinctive bar-like or wavy wing sections, colored white-on-black in males and buff-on-black in females. Juveniles are irregularly brown patched with white and buff spots.

GEOGRAPHIC RANGE

Trogons are distributed throughout central and southern Africa, Southeast Asia, Central America, and north and central South America.

HABITAT

Trogons usually live in tropical forests, being found from rainforests to tropical woodlands. Most species are scattered within the tropics and subtropics, usually inhabiting the middle elevations of forests. On the northern and southern edges of their habitat, trogons live in drier climates including thorn forests, bamboo thickets, and savannas (flat grasslands).

DIET

Trogons eat fruits and insects, and sometimes small vertebrates (animals with backbones), although diets vary depending on the continent. African species are either exclusively insectivorous (feeding solely on insects) or carnivorous (feeding solely on meat), while species in Asia and the Americas eat both foods. Moths, butterflies, stick insects, beetles, small lizards, snails, frogs, and other similar creatures are also eaten. Trogons capture most food by hovering over prey before grabbing it from the air or off of branches. They swallow their food whole usually while sitting on a perch.

BEHAVIOR AND REPRODUCTION

Trogons fly with a graceful up and down motion, but are reluctant to fly far. Because trogons have short legs and weak feet, they are unable to walk. Normally, they sit still, making them difficult to find. They generally do not migrate.

Trogons pair monogamously (muh-NAH-guh-mus-lee; each bird having just one mate), and become territorial while breeding. They are solitary during the nonbreeding season. The breeding season occurs during the dry season in the tropics when food is more common. Spring and summer breeding is typical among species in temperate (mild) and arid (dry) areas. Males will call out a “wac-wac” sound in order to attract a mate after finding a nest site. Nest sites are usually made in cavities

(hollow areas) of live trees or by roughing out holes in decaying tree trunks, but also in epiphyte (EPP-uh-fyte) root masses (plants that grow on others) and termite nests. Females answer with a call and with a show of a lowered tail. Males dig out a nest mostly with the bill, and then sing out for a female to join him. The agreeable female then helps with further construction. Nest cavities are either rising tunnels that lead to chambers, or shallow depressions that leave the occupying bird exposed. Nests are usually reused.

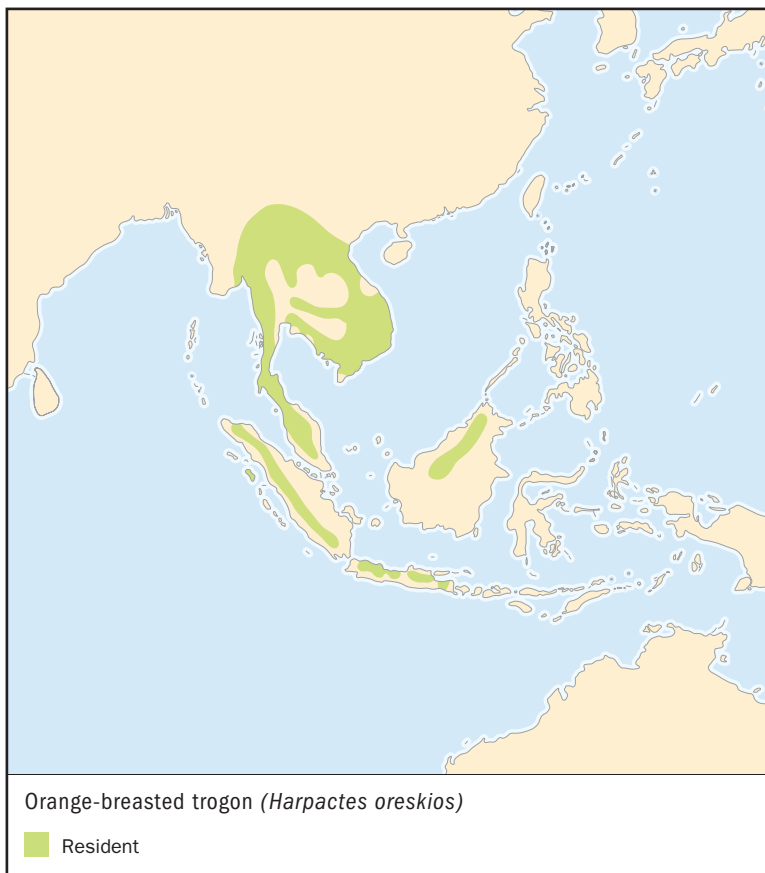
Two to four white or pastel-colored round eggs are laid in the unlined nest cavity. Usually only one brood (young birds born and raised together) occurs each year. The incubation period (time it takes to sit and hatch eggs) is sixteen to twenty-one days, being shared by both sexes but with the female usually sitting during the night. Chicks are hatched helpless, naked, and blind. They are raised by both parents, who feed them regurgitated (food brought up from the stomach) fruit and whole insects. They quickly grow down, and learn how to fly at fifteen to thirty-one days. Chicks breed for the first time at one or two years of age.

TROGONS AND PEOPLE

Hunters and collectors have targeted trogons for their brilliant tail feathers. Trogans, especially the quetzal (kett-SAHL), have often been given special status among ancient peoples. Today, many trogon species are very popular with tourists and nature lovers.

CONSERVATION STATUS

Trogons are relatively common but are still adversely affected by habitat destruction from humans. Ten trogons are identified as Near Threatened, in danger of becoming threatened with extinction, on the World Conservation Union (IUCN) Red List in 2002.



ORANGE-BREASTED TROGON

Harpactes oreskios

SPECIES ACCOUNTS

Physical characteristics: Orange-breasted trogons generally have an olive-yellow head with feathers that are bristled and upright, chestnut upperparts, orange breast that changes to bright yellow on upper and lower portions, white bars on wing sections, and a blue bill. Males have a dull olive-yellowish head with a blue ring; rufous (reddish brown) upperparts and upper tail with paler rump (lower part of back); broad white bars on wing sections; and yellow (gray-based) upper breast with some white along the mid-line. Females have additional gray-brown on head and upperparts; pale buffy-brown rump, gray breast; and yellow lower underparts. Juveniles are similar to females, with young males having warmer brown upperparts. They are



Orange-breasted trogons sometimes feed in flocks containing several other species of birds. They eat fruit and insects. (Illustration by Bruce Worden. Reproduced by permission.)

9.8 to 10.2 inches (25 to 26 centimeters) long and weigh about 2 ounces (57 grams).

Geographic range: Orange-breasted trogons are found in southern China, the Malaysian Peninsula, Java, Sumatra, and northern Borneo.

Habitat: Orange-breasted trogons are found in humid, lower-to-middle elevation evergreen forests, lowlands and swampy forests, open dry forests, bamboo forests, thin tree jungles, and sometimes among clumps of trees near forests.

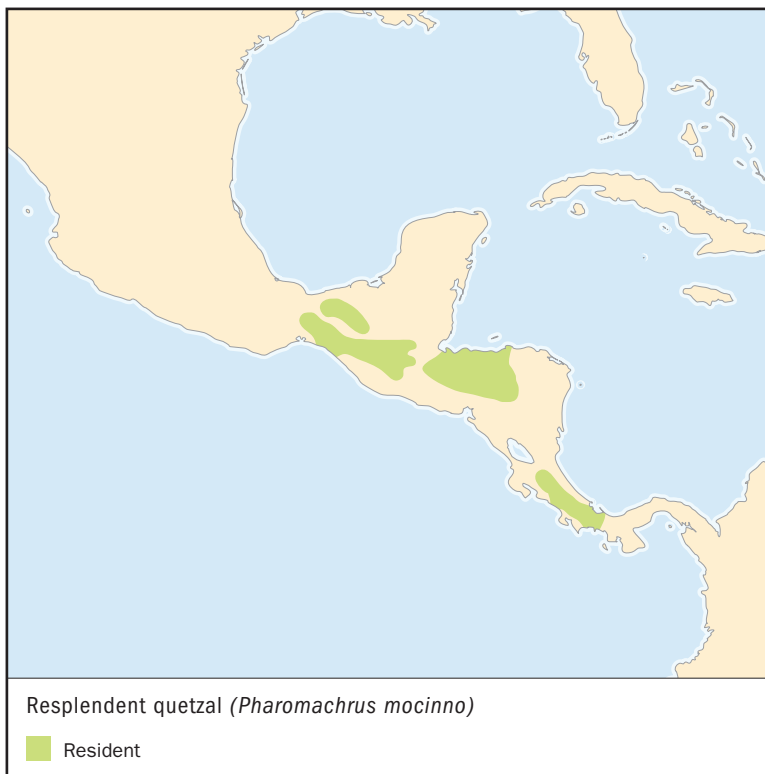
Diet: Orange-breasted trogons feed on fruits and insects including ants, beetles, caterpillars, cicadas (suh-KAY-duhz), crickets, grasshoppers, lizards, spiders, and various vegetable materials. They feed on the ground more often than other trogons, but appear to also feed high off the ground within forests. They sometimes feed in flocks containing several species.

Behavior and reproduction: Orange-breasted trogons perch on shorter trees in the middle and upper canopy (uppermost layer of vegetation) of the forest. They perch by themselves or in pairs, usually not moving. They breed January to June, but usually in February and March. These birds build nests in hollow stumps that are low to the ground, usually less than 3 feet (1 meter) from the

ground. Females can lay one to four eggs, but two or three eggs are most common. Little information is available on rearing techniques with regards to incubation and nestling periods (time when young birds are still unable to leave the nest).

Orange-breasted trogons and people: There is no known significance between orange-breasted trogons and people.

Conservation status: Orange-breasted trogons are not globally threatened. ■



RESPLENDENT QUETZAL

Pharomachrus mocinno

Physical characteristics: Resplendent quetzals generally have brilliant glittering gold-green upperparts, including the head and upper chest, which change to bluish colors depending on the direction they are seen in the sunlight. Their underparts are crimson in color from the middle to lower sections of the breast. Flight feathers are blackish, with parts beneath the tail being white. Males have a yellow bill, which is partly hidden by green feathers that circle around the eyes. Females have a blackish to yellow bill; bronze-green head; green upperparts, throat, and upper breast; gray from the mid-breast to the mid-belly; blackish upper portions of the tail; and grayish black and white under parts of the tail. Male young are similar to females, except with a yellow bill, more bronze on the upperparts, and additional white under the tail. Resplendent quetzal adults are 14.2 to 15.7

Resplendent quetzal tail feathers were used for decoration well into the twentieth century. Now, the colorful plumage of live birds is very popular with birdwatchers. (© Photo Researchers, Inc. Reproduced by permission.)



inches (36 to 40 centimeters) long, with tail streamers that are a length of up to 25.6 inches (65 centimeters). They weigh between 6.3 and 7.4 ounces (180 and 210 grams).

Geographic range: Resplendent quetzals are found in areas of Central America, from southern Mexico to western Panama.

Habitat: Resplendent quetzals occur in forests and along forest edges, mostly in the canopy and sub-canopy (below the treetops), but can

be found in lower areas. Specifically, they are found in mountainous evergreen forests, densely vegetated ravines and cliffs, park-like clearing and pastures, and open areas with scattered trees next to forests.

Diet: Resplendent quetzals eat fruit, insects, small reptiles (such as lizards), and amphibians (such as frogs).

Behavior and reproduction: Resplendent quetzals are territorial by nature. They nest in a deep, unlined cavity with one entrance. The nest is usually 14 to 90 feet (4.3 to 27 meters) off the ground in a rotting trunk or stump in the forest or in a nearby clearing. During the breeding season, which lasts from March to June, male resplendent quetzals show off to females with flying displays. Females lay one to two eggs, incubate them for seventeen to nineteen days, and then fledge them (raise them until they can fly) for twenty-three to thirty-one days.

Resplendent quetzals and people: The ancient Maya and Aztec cultures of Central America have long honored resplendent quetzals. Their plumes were used for decoration well into the twentieth century. Their colorful plumage is very popular with birdwatchers.

Conservation status: Resplendent quetzals are Near Threatened mostly due to poachers and habitat disturbances. Threats include habitat clearance, poaching, lack of law enforcement, and local exploitation of forest resources. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, J. Sargatal, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Elphick, Chris, John B. Dunning, Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

KINGFISHERS, TODIES, HOOPES, AND RELATIVES

Coraciiformes

Class: Aves

Order: Coraciiformes

Number of families: 8 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Kingfishers, todies, hoopoes, and relatives (also called coraciiforms) include some interesting bird families with many of the most beautiful species in the world. The eight families in the order Coraciiformes include: kingfishers (Alcedinidae), todies (Todidae), motmots (Momotidae), bee-eaters (Meropidae), rollers (Coraciidae), hoopoes (Upupidae), woodhoopoes (Phoeniculidae), and hornbills (Bucerotidae). Appearance between adult males and females are similar in most species, except for most hornbills and some kingfishers. The bird families are very distinct from each other, and at first glance would not appear to be related except that they have a common foot structure. All members of the order look like each other with regards to their syndactylous (sin-DACK-tuh-lus) toes. That is, all birds have two, and sometimes three, forward pointing toes on their feet that are joined together partially at the base. The middle toe is connected to the inner toe at its base and to the outer toe for most of its length. The fused-together toes are most notable among bee-eaters and kingfishers.

Generally, all species are small- to medium-sized birds with short legs, rather small and weak feet, and short toes. Coraciiforms are 4 to 31 inches (10 to 79 centimeters) long, and weigh between 0.2 ounces and 8 pounds (6 grams and 4 kilograms). One of the smallest birds is the Puerto Rican tody, which has a length of 4 inches (10 centimeters) and a weight of about 0.2 ounces (6 grams). Two of the largest species are the Southern ground-hornbill and Abyssinian ground-hornbill. Both birds

phylum

class

subclass

● **order**

monotypic order

suborder

family

are about 31 inches (79 centimeters) in length and about 7 pounds (3 kilograms) in weight.

Coraciiforms are also recognized as having large heads, short necks, and somewhat large bills. Most have bills that are long, pointed, and colorful. Bills are enormous in the hornbills, often resembling New World toucans (tropical birds with a large beak). Most species have long tails and tall crests, with bright, colorful plumage (feathers).

Coraciiforms share other, less noticeable characteristics, including the structure of the palate bones (the bones on the roof of the mouth), lack of the ambiens muscle in the leg (the muscles that control the movement of toes), and the feather tracts (the spacing of feathers in a pattern).

GEOGRAPHIC RANGE

Coraciiformes are found on all continents except Antarctica. Members of the kingfisher family are most widely distributed of all the families, being found on all ice-free continents, but are most commonly found from New Guinea to tropical Asia. Only a few kingfishers are found in the Americas, with the belted kingfisher being the species most widespread in the United States. The other families have more limited distributions. Motmots and todies are found only in the New World, with motmots found in Mexico and into South America, and todies found in the islands of the Greater Antilles (in the West Indies of the Caribbean).

The other families occur only in the Old World, ranging widely across Africa, Eurasia, and into Australia, New Zealand, New Guinea, and neighboring islands of the South Pacific. All woodhoopoes and most bee-eaters and rollers are found in Africa, usually in the warmer central and southern regions. The rest of the bee-eaters are found in other temperate and tropical regions of the Old World. Hoopoes are found in Africa and Eurasia. Hornbills are spread out between tropical Africa and Asia, with small populations in the Philippines and Malaysia.

HABITAT

Most coraciiform species are found in the tropical rainforests. Kingfishers usually inhabit tropical forests or woodlands, and are often found near water. Bee-eaters are found in temperate and tropical regions. Other regions of habitat outside of the tropics include coniferous and deciduous forests and grasslands.

They are often found along rivers and streams, seacoasts, and wetlands. Many species that live near inland waters in the summer will travel to the seacoast when inland waters freeze over in the winter.

DIET

Coraciiforms eat small animals, especially small vertebrates, or animals with a backbone, (such as fishes, reptiles, amphibians, and small mammals), and invertebrates, or animals without a backbone (such as insects, worms, and crustaceans). For instance, the shovel-billed kingfisher eats mainly earthworms. Some species, such as many forest hornbills, eat fruit and berries as their primary source of food, only adding meat when raising their young.

Although most species search for food within trees, some species hunt for food on the ground. They catch their prey primarily by dropping down to the ground from a perch (as with true rollers and bee-eaters) or into water (as with kingfishers). When birds drop down to their prey, they may hover while targeting onto food (as in kingfishers), or they may take the food as they fly (as in bee-eaters and broad-billed rollers). Some families, such as todies and motmots, use both terrestrial (on the ground) and aerial (in the air) techniques for the capture of prey. A few species gather their food while they walk or run about on the ground, such as the common hoopoes and some African hornbills.

BEHAVIOR AND REPRODUCTION

Coraciiforms share the behavior of digging cavity nests in earthen banks, sandy banks, insect and termite hills, or rotten trees. They are considered primitive perching birds. Most members of the order are partly arboreal; that is, they primarily live, feed, and breed in trees. Many members are social in their habits and are somewhat noisy when communicating among themselves and warning others of their presence. In fact, the laughing kookaburra, one of the best known birds of Australia, is famous for its “laughing” song.

Most species nest in cavities, crevices, or holes in a tree, rock face, building, or within the ground (such as a tunnel with the nesting chamber at the end). Kingfishers, todies, motmots, and bee-eaters usually dig their own earthen burrows, which often occur in sandy banks, rotten trees and other wooden places, or

insect nests. Nests become very smelly as body waste and the remains of food accumulate inside. Only hornbills maintain tidy nests, going to the effort of directing body waste outside the nest and removing food remains.

Male and female pairs mate for life. Most species are territorial when breeding, meaning that they keep other birds away from their nest. In addition, most species breed as a single male-female pair. In some families, there are species that live and breed as groups (usually a mating pair plus one or a few helpers); some species even nest in large colonies (large groups of birds that live together and are dependent on each other). Males and females generally share duties of nest construction, chick defense, and food delivery (with males providing most of the early gathering of food, and females sharing more feeding duties after the chicks have grown).

Eggs are normally laid inside a cavity that is thinly lined with plant materials. Females produce white or pale eggs, except hoopoes, whose eggs are tinted light blue-green. The eggs are rounded and shiny, except for the oval ones of the hoopoes and hornbills. In most species, the female performs most or all of the incubation (sitting on) of eggs and the raising of young chicks. The eggs hatch after two to four weeks of incubation. The length of time is different for each species. The newborns are hatched helpless, blind, and naked, except in hoopoes, whose newborns have patches of fine down. The upper jaw in newborn chicks is visibly shorter than the lower one. They depend on their parents when very young. They have waxy sheaths (tube-shaped coverings that protect feathers) on their feathers up until the time that they are able to fly.

KINGFISHERS, TODIES, HOOPOES, RELATIVES, AND PEOPLE

People generally enjoy the colorful appearance of coraciiforms. In fact, the area of Sarawak (in north-central Malaysia) is known as “The Land of the Hornbill” and the state of Sabah (in northeast Malaysia) has a kingfisher on its national coat of arms. However, with the continued unrestricted spread of human development into their habitats, the birds continue to be threatened in their abilities to live freely in their natural environments. For the most part, when they have a large geographical range, the birds are commonly seen and not adversely affected by the presence of people.

CONSERVATION STATUS

Twenty-five species of Coraciiformes are threatened with extinction. There are three Critically Endangered species, facing an extremely high risk of extinction in the wild; five listed as Endangered, facing a very high risk of extinction in the wild; and seventeen species are Vulnerable, facing a high risk of extinction in the wild.

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

AOU *Check-list of North American Birds*, 7th ed. Washington, DC: The Union (The American Ornithologists' Union), 1998.

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona, Spain: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Elphick, Chris, John B. Dunning Jr., and David Allen Sibley. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf (distributed by Random House), 2001.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley (distributed by Houghton Mifflin), 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Kaufman, Kenn. *Birds of North America*. New York: Houghton Mifflin, 2000.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison, J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

KINGFISHERS

Alcedinidae

Class: Aves

Order: Coraciformes

Family: Alcedinidae

Number of species: 91 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Kingfishers are vibrant birds both in appearance and behavior, with a long pointed bill, small weak feet, large head, compact body, short neck, and very short legs. The bill and feet are usually black or brown but may be yellow, orange, or red. The bill's shape depends on feeding habits: narrow and flattened at the sides in species that hunt prey by water diving; broad and flattened with distinct upper and lower surfaces in species that catch small ground animals; or especially wide in forest species that search for prey in soil and leaf litter. The feet have three front toes that are fused at their bases. In some species, the second toe is shortened or absent. The metallic-looking plumage is often black, white, or reddish brown, with areas of iridescent blue, purple, or green. Wings are short and rounded, while the tail varies from extremely short to very long. Kingfishers are 4 to 18 inches (10 to 48 centimeters) long, and weigh between 0.3 and 16.4 ounces (9 and 465 grams).

GEOGRAPHIC RANGE

Kingfishers are found on all continents except Antarctica, but are unevenly distributed with regard to species. Most species that live in forests are found in Australia, New Guinea, and Indonesia east of Bali and Sulawesi. Others are found on the islands of the Pacific, in western Indonesia, the islands of Java, Borneo, Sumatra, and the Philippines. A few species are found on the Asian mainland, in India, and the Middle East. Species that live in savannas, grasslands, are found mostly in the tropical region of sub-Saharan Africa and Madagascar.

HABITAT

Kingfishers are found throughout aquatic or wooded habitats, avoiding open country. They range from arid savannas to dense rainforests, and from low seacoasts to high mountains. Species that feed on aquatic animals are found from arid (dry, little rainfall) seashores to small mountain streams. Species that feed on land animals are found from arid savannas to dense rainforests.

DIET

Most kingfishers consume relatively large invertebrates, especially grasshoppers, earthworms, and crustaceans, as well as small vertebrates, especially reptiles, fishes, and amphibians. A few species eat fruit. They spend much time perched in a stationary position on the lookout for prey, animals they hunt for food, swooping down to grab prey from the ground, water, air, or leaves.

BEHAVIOR AND REPRODUCTION

Most species are sedentary (tending not to move), and nearly all are diurnal (active during the day). Many of them bathe by diving repeatedly into water. The majority of species roost alone within vegetation. They all are highly vocal. Loud calls warn visitors that they have ventured into kingfisher territories, while softer calls are communications between mates or with offspring.

To attract females, male kingfishers perform courtship rituals such as aerial displays, plumage, feather, exposure, and feeding of females. Both sexes play roles in selecting and digging nest sites, usually in earthen banks, but also in rotten wood, termite nests, or tree hollows. They dig by flying into the surface bill-first, then loosening debris with the bill, and later by kicking out loosened materials with feet. A tunnel is built that can extend from 3 to 26 feet (1 to 8 meters), ending in an unlined nest cavity.

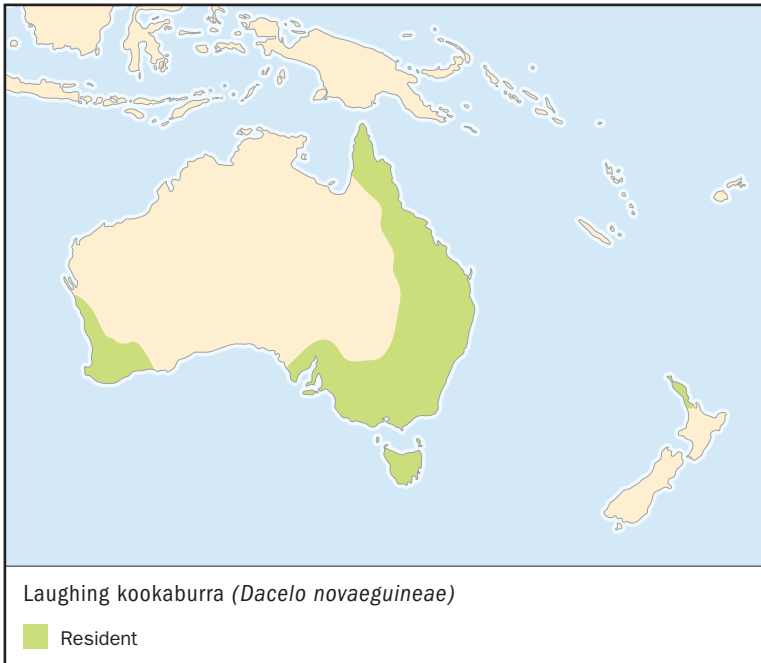
The white, round, shiny eggs are laid one a day with two to seven eggs in a clutch. Both sexes take part in incubation and care of young. Females remain on the nest overnight. Incubation takes from two to four weeks, and the nestling period is from three to eight weeks. Babies are born blind and naked. Feathers emerge with quills (hollow feather shafts). They become independent a few days to about a week after learning to fly, and become sexually mature within a year.

KINGFISHERS AND PEOPLE

Some people hunt kingfishers when the birds eat fish commercially raised on farms. In the past, some kingfishers were stuffed for the beauty of their plumes and feathers, and other feathers were worn as hair decorations. Often the call of kingfishers was seen as an omen. The laughing kookaburra is an important symbol of Australia.

CONSERVATION STATUS

The main threats to kingfishers are the clearing, draining, or polluting of rainforest habitats. Twelve species are considered threatened by extinction, dying out, and at least two subspecies have become extinct. Threatened species are found in Southeast Asia and the Pacific Islands, including New Zealand and Australia.



LAUGHING KOOKABURRA

Dacelo novaeguineae

SPECIES ACCOUNTS

Physical characteristics: Laughing kookaburras are the largest of the kingfishers, with a dark brown and white body, blue rump, and reddish tail with white-tipped outer tail feathers and blue-tipped wing coverts (feathers between flight feathers of the wing and tail). They have a dark stripe through their eyes. The blunt, heavy bill is black in color above and horn-colored below. Their small feet are used mainly for perching. They are from 15 to 17 inches (39 to 42 centimeters) long, and weigh between 7 and 16 ounces (190 and 465 grams).

Geographic range: Laughing kookaburras are located in eastern and southwestern Australia.

Habitat: Laughing kookaburras are found in dry and open eucalyptus forests and woodlands, and often are seen in parks and gardens that border such areas.

Diet: Laughing kookaburras eat mostly insects, beetles, grasshoppers, and spiders, but also eat small vertebrates, such as snakes,

Laughing kookaburras get their name from the cackling sounds they make. (Kike Calvo/Bruce Coleman Inc. Reproduced by permission.)



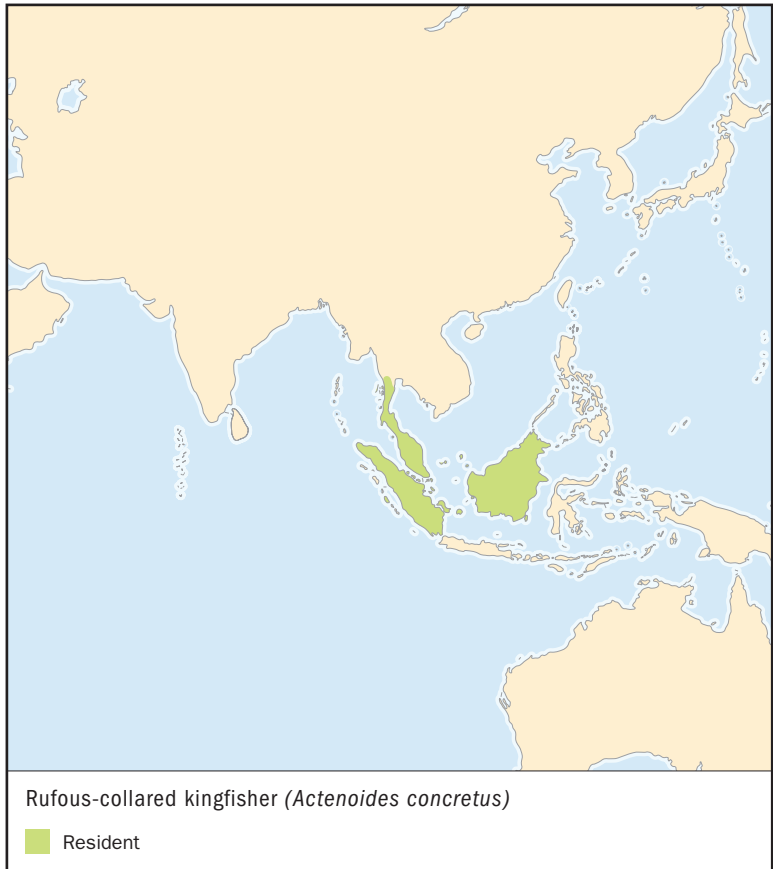
lizards, mice, and small birds. When spotting prey, they swoop down to pick up small animals. They usually eat alone.

Behavior and reproduction: A breeding pair and its mature offspring are often heard cackling at dawn. When in defense of their territory, laughing kookaburras often have their heads stretched up and tails raised while making cackling sounds. During the day, they are often seen perched motionless in dense foliage, looking for prey.

The male and female breed for life, and share the raising of their latest brood with older offspring. Nests are usually made in natural cavities, but can be formed from termite nests or soft dead wood. Females lay from one to five eggs. The incubation period is between twenty-four and twenty-nine days, with the female performing most of the duties, and other members performing other chores. The nestling period is from thirty-two to forty days. Young birds stay with their parents for several years as helpers.

Laughing kookaburras and people: People in Australia are very familiar with the life of laughing kookaburras, and the birds are a well-known emblem of the country.

Conservation status: Laughing kookaburras are not threatened, being widespread and common. In fact, the species grows in numbers when humans develop previously undeveloped areas such as parks and gardens, where the birds can safely look for food under leaf litter and mulch. ■



RUFOUS-COLLARED KINGFISHER

Actenoides concretus

Physical characteristics: Rufous-collared kingfishers are medium-sized, plump kingfishers, with a green crown (top of the head); blue (in males) and buff-spotted green (in females) back; and rufous (red) coloring on and below the collar. The bill is black above and yellow below. Rufous-collared kingfishers are 9 to 9.5 inches (22.9 to 24.1 centimeters) long, and weigh between 2.1 and 3.2 ounces (59.5 and 90.7 grams).

Geographic range: Rufous-collared kingfishers are commonly found on the Malay Peninsula, Borneo, and Sumatra.

Habitat: Rufous-collared kingfishers are usually found in dense, lowland rainforests, and sometimes in secondary forests (that is, in forests where new vegetation has formed after the original vegetation of the forest has been destroyed either by nature or by humans). They are found up to 5,600 feet (1,700 meters) above sea level.

Diet: They feed on various arthropods; mostly insects and large scorpions, but also fish, snails, small snakes, and lizards. They catch prey by dropping from a low perch to snatch the prey off the water surface or off the ground. Occasionally, they turn over leaves in search of food.



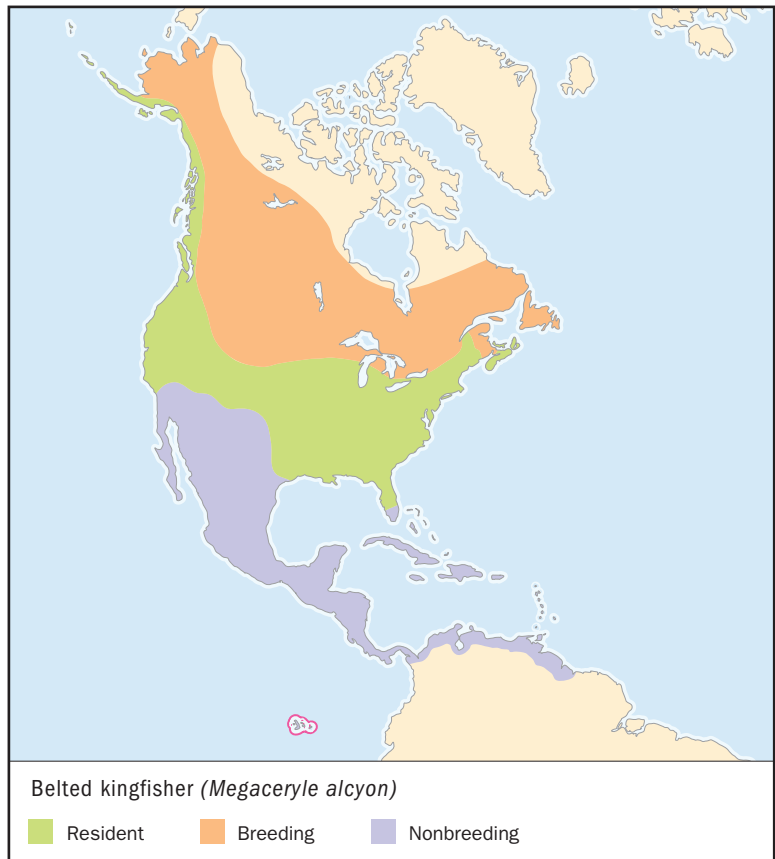
Behavior and reproduction: When calling out, rufous-collared kingfishers produce a loud, long whistle that rises in tone. They perch mostly in the middle and lower levels of forests. When perched, they will regularly show a slow bobbing head and pumping tail.

Monogamous (muh-NAH-guh-mus) pairs, birds mated only with each other, usually dig nest burrows in earthen banks, but also use rotten tree trunks. They dig out tunnels that end in a nest chamber about 8 inches (20 centimeters) in diameter. Females usually lay two eggs, which are incubated for about twenty-two days.

Rufous-collared kingfishers and people: There is no known significance between people and rufous-collared kingfishers.

Conservation status: Rufous-collared kingfishers are considered Near Threatened, in danger of becoming threatened with extinction, due to extensive removal of lowland forests, but continue to survive in hill forests and in conserved tracts. ■

Rufous-collared kingfishers usually catch prey by dropping from a low perch to snatch the prey off the water surface or off the ground. (Illustration by Brian Cressman. Reproduced by permission.)



BELTED KINGFISHER

Megaceryle alcyon

Physical characteristics: Belted kingfishers are large kingfishers with a stocky blue-gray body, white breast and collar, and large head. It is one of the few North American birds in which females are more colorful than males. Males have blue-gray upperparts with a plain blue-gray band across the breast and appear to have a big head with a large bill and shaggy, double-pointed crest. A white spot appears around its eyes. Females have a blue-gray breast band with a rufous band below. In flight, it shows a white patch on the upper wing. Juveniles of both sexes resemble adult females. They are 11 to 13 inches (28 to 33 centimeters) long, about 20 inches (51 centimeters) in wing span, and weigh between 4 and 6.3 ounces (113 and 178 grams).



Belted kingfishers eat mainly fish, and often plunge headfirst into the water, catching most prey within 2 feet (60 centimeters) of the surface. (Scott Nielsen/Bruce Coleman Inc. Reproduced by permission.)

Geographic range: Belted kingfishers are found across the north-central United States and southern Canada, and south throughout the United States, except for southwestern and far south-central regions and southern Florida. During the summer breeding season, belted kingfishers migrate from about 65° north latitude to nearly the Arctic Circle. During nonbreeding winter, the birds migrate to the southwestern United States and central America, south to the Galápagos Islands and Guyana.

Habitat: Belted kingfishers are found around wooded freshwater bodies such as lakes, rivers, streams, ponds, and estuaries or calm marine waters. They range from the seashore to 8,200 feet (2,500 meters) above sea level. During nonbreeding seasons, they gather in mangroves, coasts, watercourses in open country, marshes, and offshore islands.

Diet: Belted kingfishers eat fish, but also take amphibians, reptiles, insects, crustaceans, crayfish, mollusks, small mammals, young birds, and berries. They hunt in the late morning or afternoon. Sometimes the birds follow egrets for prey that they disturb. They hunt for food by either perching from trees or by hovering from 20 to 49 feet (6 to 15 meters) above streams or ponds. Often, they plunge headfirst into waters, catching most prey within 2 feet (60 centimeters) of the surface. They pound captured prey against their perch with sideways head movements.

Behavior and reproduction: Belted kingfishers fly with irregular wing beats. They are easily seen in tree perches that overlook water or on coastal rocks. Their territorial call is a long, uneven rattle. They also have a higher, shorter, more musical trill sound.

Belted kingfishers are monogamous birds, with both parents helping to dig out a tunnel and nest in an earthen bank that is within easy reach of water. They usually dig down from 3 to 7 feet (1 to 2 meters) below the ground surface but can go down to 15 feet (4 meters), with a nest cavity of 8 to 12 inches (20 to 30 centimeters) in diameter. Females lay from five to eight eggs, which are incubated between twenty-two and twenty-four days and nested between twenty-seven and thirty-five days. Males and females share incubation (sitting on eggs), brooding (providing warmth and shelter by gathering chicks under the breast or wing), and feeding duties. They have from one to two broods (groups of young birds) per year.

Belted kingfishers and people: Before regulations, people sometimes hunted belted kingfishers when they fed on fish stocks at fish hatcheries and along trout streams.

Conservation status: Belted kingfishers are not threatened. They are widespread and common in many areas, being more resistant to pollution than most other kingfishers. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

AOU *Check-list of North American Birds*, 7th ed. Washington, DC: The American Ornithologists' Union, 1998.

Elphick, Chris, John B. Dunning Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Kaufman, Kenn. *Birds of North America*. New York: Houghton Mifflin, 2000.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

Coraciiformes Taxon Advisory Group. <http://www.coraciiformestag.com> (accessed on July 19, 2004).

family CHAPTER

TODIES

Todidae

Class: Aves

Order: Coraciiformes

Family: Todidae

Number of species: 5 species

PHYSICAL CHARACTERISTICS

Todies are tiny, delicate, rather chunky kingfisher-like birds. They have a broad head; a long, narrow, and somewhat flattened bill that is colored red or orange-red below and black above; sky-blue to gray cheeks; bright scarlet-red throat patch; short, slightly rounded tail; and shining green wings. All species have brilliant emerald-green feathers on their upper bodies, with various colors on the breast, sides, and stomach depending on the species, some pale (whitish, cream, or grayish) and others having mixtures of pink, yellow, green, and blue. Individual species are identified most often by the different colors of their sides, stomach, and cheeks.

The shape of the bill is designed for efficient eating. It easily snaps up insects from the undersides of leaves in short, sweeping movements. Most species have short, rounded wings and loosely fluffed plumage (feathers). The short wings are efficient for their short flights. Other species fly longer distances, and have longer wings. Males and females are similar in physical characteristics. Adult todies show no changes in feather color between the seasons. The five species are: Cuban tody, narrow-billed tody, Puerto Rican tody, Jamaican tody, and broad-billed tody.

Todies somewhat resemble miniature kingfishers and often are mistaken for hummingbirds. They are 4 to 4.6 inches (10.1 to 11.7 centimeters) long, and weigh between 0.19 and 0.27 ounces (5.4 and 7.7 grams).

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

GEOGRAPHIC RANGE

Todies range through the larger islands of the Caribbean, including the Greater Antilles in the West Indies. Cuba, Jamaica, and Puerto Rico each have one species, while Hispaniola holds two species.

HABITAT

Todies inhabit primary (original) and secondary (vegetation has regrown after the original forest is cut down) tropical forests and woodlands, including dry lowlands, lush mountain rainforests, pine groves, streamside vegetation, pasture borders, limestone regions, cactus deserts, and shaded coffee plantations. Within these environments, their population is limited by the amount of vegetation, number of insects, and other requirements, especially good nesting locations. They occupy environments ranging from 160 feet (50 meters) below sea level to elevations above 9,800 feet (3,000 meters). They seek out brushy lands and forests with plenty of foliage (leaves, flowers, and branches), epiphytes (EPP-uh-fytes; plants that grow while attached to another plant, usually high in the air), and vines. They often are found along the edges of streams or rivers.

DIET

Todies eat large amounts of food with respect to their tiny body size, often eating one insect or more during every minute of the daytime hours. They eat a wide variety of insect families, but chiefly consume ants, bugs, butterflies, cockroaches, damselflies, flies, grasshoppers, mantids, and mayflies. They also eat lizards, seeds, and spiders.

BEHAVIOR AND REPRODUCTION

Todies generally appear as vivid green birds that fly rapidly with bounce-like actions through the woods in pairs while chirping to each other. They often accompany such behaviors with loud nasal beeps, grating and monotonous “neet” or “prrrrreet,” or harsh chatter. Their calls help to distinguish the various species. They are generally territorial (protecting an area from other birds), but will temporarily join other species that are feeding within their territories. They spend much of the day, either alone or in pairs, sitting motionless on perches of small twigs. They normally perch with their bills in an up-lifted position.

Todies catch their prey by a graceful stunt-plane-like technique in which the head is directed upward while the bird scans the undersides of leaves and twigs. While jerking its head and moving its eyes, it darts upward at a shallow angle and flies at a short curved path in order to grab an insect and continue the end of its flight at another perch. They may also hover in mid-air in order to catch prey.

Todies are homeotherms; that is, they have body temperatures like humans in which metabolic rates and temperatures are controlled. At times, todies can become very inactive to conserve energy. Such dormant periods occur when they cannot eat because of the darkness at night and during long periods of heavy rain. Females also become dormant in order to save their energy while breeding. Todies do not migrate.

Todies often show courtship displays of hovering and zooming that involve great amounts of whirling and crackling of the wings. The flapping of the wings (sometimes called wing-rattling) is similar to the noise heard when pulling a finger quickly across a comb. Males and females pursue each other at very fast speeds, weaving around foliage. Once paired, both will exchange freshly caught insects.

When ready to start a family, they dig tube-shaped, angled tunnels in vertical soil embankments from February to May. One tunnel may take eight weeks to finish. Bills chisel out the soil, while their feet push the soil away. Tody eggs are much larger than eggs of other similarly sized birds, with eggs weighing about 26 percent of the adult's body weight (with typical egg-to-body weight in birds from 2 to 11 percent). Tody females lay one clutch, or set of eggs, per year, with two to five eggs per clutch. If destroyed, females will produce another clutch.

Eggs are tiny, white, glossy, and roundish. Incubation periods (time spent sitting on eggs) last twenty-one to twenty-two days, while nestling periods (time a young bird spends at the nest after hatching) are between nineteen and twenty days. Each parent spends only two to three daylight hours incubating. Hatching occurs usually in the late afternoon. Nestlings are born naked, with cushioned heels that cover the feet. Young remain in the nest until they can fly.

TODIES AND PEOPLE

People degrade the territory of todies when they enter and alter the natural forests they prefer. They are often an attraction

for birdwatchers, allowing people to approach them as closely as 6 feet (2 meters).

CONSERVATION STATUS

Todies, generally, are not threatened. However, in 2001, population densities decreased due to habitat destruction. The narrow-billed tody is considered Near Threatened, in danger of becoming threatened with extinction.



CUBAN TODY

Todus multicolor

SPECIES ACCOUNT

Physical characteristics: Cuban todies are brilliantly colored, primarily green in body color, with a big head, no neck, and the smallest bill of all todies. They have rosy pink sides, whitish stomach, yellow undertail coverts (feathers between flight feathers of the wing and tail), red throat, and sky-blue cheek patch. The flattened bills have notched edges and a yellow base. Their eyebrows are an almost brilliant yellow-green. They have a wingspan of about 4.3 inches (10.8 centimeters) in length, with a weight of between 0.21 and 0.23 ounces (6.0 and 6.5 grams).

Geographic range: Cuban todies range throughout Cuba, including the Isle of Pines (Isle of Youth) and four large cays (KEYS or KAYS; low islands or reefs) off of Cuba's north coast.

Habitat: Cuban todies are found in dry lowlands, dry mountainous scrublands, tropical deciduous forests, tropical lowland evergreen forests, mountainous evergreen forests, pine forests, and along

seashores (near coastal vegetation). Specifically, they are found in shady areas, usually along streams and rivers.

Diet: Cuban todies eat mostly small adult and larval insects, but have been known to eat caterpillars, spiders, and small lizards. They sometimes (but rarely) eat small fruits.

Behavior and reproduction: Cuban todies are rather inactive birds that search for prey from a perch. They forage, search for food, in arid scrub at an average height above the ground of 9 feet (2.7 meters). They often look for food from twigs and undersides of leaves. They make a characteristic rattling with their wings. When perched, they sometimes repeat a peculiar short “tot-tot-tot-tot” sound. Their most characteristic call is a soft “pprreeeee-pprreeeee.”

Cuban todies pair for life, and have striking courtship patterns, including showing their bright pink sides. They breed from April to June, first digging burrows in earthen banks, within rotten logs, and in natural limestone cavities. Tunnels are usually about 1 foot (0.3 meters) in length, with a chamber at the end. The walls of the tunnel and the egg chamber are often lined with a thick glue-like substance mixed with algae (AL-jee), grass, lichens (LIE-kenz), small feathers, and other materials. Though infrequent, they also build at cave entrances. The white eggs produced by the female, usually three to four in number, are the smallest of the todies.

Cuban todies and people: People in poor areas sometimes eat Cuban todies. Otherwise, they are a delight to people who enjoy watching them.

Conservation status: Cuban todies are not threatened by extinction, being common and widely distributed throughout its range. However, Cuba’s poverty and unstable economy may affect tody populations, especially with regards to pesticide use, which may harm the todies. ■

FOR MORE INFORMATION

Books:

Clements, James F. *Birds of the World: A Checklist*. Vista, CA: Ibis Publishing Company, 2000.

Elphick, Chris, John B. Dunning Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

MOTMOTS

Momotidae

Class: Aves

Order: Coraciiformes

Family: Momotidae

Number of species: 9 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Motmots are impressive-looking, robust birds that look somewhat like kingfishers. Male and female motmots have a similar appearance. The birds have bright shades of green and blue colors, a black mask, and a long racquet-tipped tail in most species.

The longish, powerful bill curves slightly downward at the tip, and, in most species, the bill has notches like saw teeth along the edges that are used for cutting. The tongue is somewhat long. Legs are short, with each foot having three front toes and a rear toe. The middle front toe is almost completely joined to the inner toe.

The short wings are rounded. Plumage (feathers) is bright green or turquoise green on the back and tail of all species, with specks of soft blue or reddish brown on the wings and tail. Some species have brilliant blue or emerald stripes along the side of the head. There is a mixture of browns and greens on the underbody.

Several species have green or brown crowns (feathers at the top of the head) but most species have crowns of turquoise, blue, or black. Several species have a black spot on the breast. All birds have a black mark through or near the eyes; in some species, the mark is accented by thin turquoise stripes above and below. A group of black feathers at the chin and throat is characteristic of all motmots.

The tail is broad and long and sharply tapers at the base. The central pair of feathers is extra long. Barbs (parts of a feather)

near the tail fall off readily, resulting in the shaft looking bare in spots. At these empty spots, a small oval disk remains.

Motmots are 6 to 21 inches (16 to 53 centimeters) long, and weigh between 0.9 and 7.4 ounces (25 and 210 grams).

GEOGRAPHIC RANGE

Motmots are found from northeastern Mexico through most of tropical South America, as far as northern Argentina. Honduras contains seven species, while Mexico, Guatemala, and Nicaragua each have six species. Venezuela, the Guianas, and Suriname have only one species.

HABITAT

Motmots are mainly found in tropical or mountainous forests and woodlands. Although most species are lowland dwellers, the blue-throated motmot ranges from 4,900 to 10,000 feet (1,500 to 3,100 meters) in middle America, and the highland motmot ranges between 4,100 and 7,200 feet (1,250 and 2,200 meters) in the South American Andes. Most motmots inhabit the midstory or understory (rather than the overstory, or highest trees) of forests or woodlands.

DIET

Motmots eat invertebrates, or animals without a backbone (such as beetles, butterflies, caterpillars, centipedes, cicadas [suh-KAY-duhz], crabs, dragonflies, earthworms, mantids, millipedes, spiders, scorpions, and snails), small vertebrates, or animals with a backbone (such as frogs, lizards, nestling birds, small fishes, and small snakes), and fruits (such as the fruit of figs, heliconia, incense, palms, and nutmegs). It appears that the larger the species, the more fruit it has in its diet.

Motmots secure food in different ways, depending on the size of the species. Smaller species use sit-and-wait strategies and secure prey that is flying, while larger species fly in their search for prey that is usually on the ground. Once caught, prey is beaten against a perch with their strong bills in order to crush it. Indigestible food is regurgitated (re-GER-jih-tate-ud) as pellets. Some species follow trains of army ants that disturb insects, allowing them to grab the insects.

BEHAVIOR AND REPRODUCTION

Motmots appear to be solitary (living alone), but maintain pair bonds (bonds between a mated pair) throughout their lives.

When disturbed, a motmot twitches its tail. Motmots are not very active, and are hard to see when they remain still within the forest. They are inactive at night and active during dawn and dusk. Calling is most active during the early morning. Short migrations sometimes occur for motmots; they may leave breeding areas for a month or so. Motmots have a wide range of calls, from soft, rhythmical hoots to squawk-like and cooing noises, which are sounded singly or in a series. Voices can carry for long distances. Males and females sing together as a mating ritual, which also helps to strengthen the bond during the non-breeding season and to maintain the security of their territory.

Mating pairs build nests usually by themselves, but sometimes in the company of other nests, sometimes with more than forty pairs of breeding birds. Nests are usually in burrows in earthen banks, but are sometimes in crevices in rocks. Motmot male-female pairs dig out underground chambers, taking turns at loosening soil and kicking dirt out of the opening. The chamber may be from 5 to 16 feet (1.5 to 5 meters) long in the larger species. Eggs are laid on bare soil, but may also be laid on regurgitated insect parts. Rounded, shiny, and white eggs are usually laid three to five per clutch. Only one clutch per year is normal, unless the clutch is lost to predators or the weather. In those cases, a second clutch is laid after ten to twenty-one days. Eggs are incubated by both sexes during long shifts of up to twenty-four hours at a time. The incubation period is between seventeen and twenty-two days, depending on the species. Chicks hatch blind, featherless, and dependent on their parents. Both sexes care for the brood, feeding them butterflies, moths, other insects, partially digested food, and protein-rich fruits. Young leave the nest from twenty-four to thirty-two days after hatching.

MOTMOTS AND PEOPLE

People use motmot tail feathers and wings for ornamentation.

CONSERVATION STATUS

One species is Vulnerable, facing a high risk of extinction, dying out: the keel-billed motmot. Habitat destruction is a concern for all species as the destruction of forests and woodlands continues unabated.



BLUE-CROWNED MOTMOT

Momotus momota

SPECIES ACCOUNT

Physical characteristics: Blue-crowned motmots have a large head with down curved, short, broad beaks, which are serrated along the upper edge. They have bluish black crowns that are bordered with violet and turquoise, and have a black mask with turquoise above and below. The back of the neck is rufous (reddish brown), and its upper



Blue-crowned motmots capture prey by sitting quietly on wires, fence posts, or tree branches, and then suddenly flying toward the prospective meal, taking it while it flies or while its on the ground. (Michael P. L. Fogden/ Bruce Coleman Inc. Reproduced by permission.)

body parts are green to olive brown. They have olive green to dull cinnamon under body parts, with one or more spots on the chest.

The plumage of the blue-crowned motmot is composed of shades of blue and green. The center tail feathers are greenish blue, and have bare spines at the tip. Their legs are particularly short. The feet have a middle toe that is almost completely fused to the inner toe, but not to the rear toe. Blue-crowned motmots are 15 to 16 inches (38 to 41 centimeters) in length (including the tail) and weigh between 2.7 and 6.2 ounces (77 and 175 grams). The bill is about 1.6 inches (4.1 centimeters) in length.

Geographic range: Blue-crowned motmots have the widest distribution of any motmots. They are found from northeastern Mexico to northern Argentina.

Habitat: Blue-crowned motmots occupy a variety of habitats, including tropical evergreen and deciduous forests, coastal forests, mountainous forests, and secondary vegetation. They live on the edges of rainforest, secondary growth forests, and plantations. They range to altitudes up to 4,300 feet (1,300 meters), living near water for drinking and bathing.

Diet: Blue-crowned motmots eats insects and other invertebrates, including earthworms, centipedes, and snails. They sometimes eat mice and small reptiles and amphibians, and occasionally some fruits.

They capture prey by sitting quietly on wires, fence posts, or tree branches looking for prey. Sighting possible food, they suddenly fly toward the prospective meal, taking it while it flies or while on the ground. Before swallowing its prey, they hit it repeatedly against the ground or branches to kill or stun it. Insects are often eaten after trains of army ants disturb them. Fruits are often plucked while the birds hover in the air.

Behavior and reproduction: Blue-crowned motmots can sometimes appear to be solitary birds, but in reality they maintain pair bonds. They are not very active and often go undetected. The tail often twitches like the pendulum of a clock when the motmot is disturbed. They make a sound like a double hoot with a resonance similar to that of an owl. They are inactive at night and active during twilight at both dawn and dusk, and most active at the early morning light.

Pairs of blue-crowned motmots, who are believed to mate for life, dig holes during the rainy months from August to October when the soil is soft. The tunnel holes are 5 to 14 feet (1.5 to 4 meters) long and about 4 inches (10 centimeters) in diameter. The nest cavity usually measures 10 inches high (25 centimeters), 10 inches (25 centimeters) in width, and 14 inches (36 centimeters) in length. They are normally dug into the sides of cliffs or in the ground, but will use rock crevices on occasion. They reappear at the holes during the beginning of the breeding season, from March to April.

After a courtship ritual involving the carrying of leaves by the male to the female, mating begins. One adult incubates the eggs from early afternoon to dawn, and then the partner takes its place. Incubation lasts about twenty-one days. Lowland motmots stop covering their young at night when they are a week old. Young resemble adults in coloration, but lack long racket-like tail feathers.

Blue-crowned motmots and people: People have successfully bred blue-crowned motmots in captivity.

Conservation status: Blue-crowned motmots are not threatened. Because of their ability to live in a wide geographical range and in many different forest types, and to tolerate intrusion by humans, blue-crowned motmots are commonly found. However, when forests are destroyed, their survival may become threatened. ■

FOR MORE INFORMATION

Books:

Clements, James F. *Birds of the World: A Checklist*. Vista, CA: Ibis Publishing Company, 2000.

Elphick, Chris, John B. Dunning, Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego: Academic Press, 1998.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

"Blue-crowned Motmot (*Momotus momota*)."
Coraciiformes Taxon Advisory Group, TAG website. <http://www.coraciiformestag.com/Motmot/history.htm> (accessed on 20 March 2004).

BEE-EATERS

Meropidae

Class: Aves

Order: Coraciiformes

Family: Meropidae

Number of species: 22 to
24 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Bee-eaters are small- to medium-sized birds that are graceful in appearance and actions, and with an alert, upright posture when perched. They are active, colorful, and social birds with a large head; short neck; long, narrow, down-curved bill; green wings with a broad black tailing edge; long, simply patterned tail; long-looking central feathers (in many species); very short legs; and weak feet. Most bee-eaters have bright green upperparts; buff or chestnut colored underparts; various colorful head and facial patterns; and black, blue, or reddish purple eye mask. They usually have a black band on the upper breast, and the chin and throat are snowy, bright yellow, red, or blue. Wings are rounded in forest species, and long and pointed in open country species.

In all species, males and females are similar, though males can be brighter in color than females and usually have longer tail streamers (long central tail feathers). Young bee-eaters are generally less colorful than adults. Adults are 6.7 to 13.8 inches (17 to 35 centimeters) long (including the tail) and weigh between 0.5 and 3.0 ounces (15 and 85 grams).

GEOGRAPHIC RANGE

Bee-eaters range throughout the tropics of the Old World, with their center of population in northern and tropical Africa. They are also found in Madagascar, Southeast Asia, New Guinea, and Australia.

HABITAT

Bee-eaters live in areas of open, lightly wooded country such as savannas (flat grasslands), woodlands, steppes (large, often treeless, plains), and scrub deserts. Some species prefer rain-forests. They are often found near water.

DIET

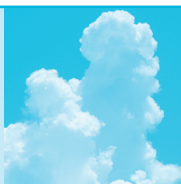
Bee-eaters eat bees, mostly honey bees, other venomous (poisonous) insects such as wasps, as well as ants, sawflies, and other flying insects. A few species eat large insects, small lizards on the ground, and small fish. They find bees near their hives or around flowering trees and herbs. Most bee-eaters catch their prey in a “sit-and-wait” position, sitting on a perch, finding likely prey, and chasing them down in flights that might cover distances from 150 to 180 feet (50 to 60 meters). They normally return to their perch in order to consume food.

BEHAVIOR AND REPRODUCTION

Bee-eaters are, for the most part, lively birds. Only about five species prefer to live alone. They usually live in colonies (large groups that live dependently together), and prefer to have close contact with each other, often huddling together on a common perch in groups of six or seven. When perched, they move the tail backwards and forwards in a small sweeping motion. They migrate seasonally between breeding and wintering grounds. Their calls sometimes have melodies, while at other times are hoarse cawings.

Reproduction by bee-eaters depends on the species. Some use solitary nesting activities, while others depend on large colonies to help in nesting. Cooperative breeding within colonies is more normal than unaided pair nesting. Courtship rituals between bee-eaters do not exist other than some shared feeding between courting (getting ready to mate) females and males. Males will chase away any rival males when necessary, and call out to neighboring pairs not to approach too closely.

All bee-eaters dig nesting burrows into earthen banks or flat sandy ground, often along rivers, ditches, gullies, and even into aardvark or warhog dens. Nests may be solitary, in groups of two or three, in regular or irregular arrangements along banks, or in large colonies containing up to one thousand or more holes. Burrows may be 1.5 to 9 feet (0.5 to 3 meters) long, depending



BEE-RUBBING

Because their prey is poisonous, bee-eaters undertake a complicated process to assure poison is removed before eating. After taking caught prey back to the perch, bee-eaters toss it into the air, catching it with its bill tip. They strike it several times against the perch. In an action called bee-rubbing, bee-eaters grab the insect's tail tip, quickly rubbing the body against the perch to squeeze out the bee's fluid. They gradually grab the insect around its abdomen in order to expel leftover venom, eventually tearing out the stinger and poison glands. The food is then safely swallowed whole.

on the species and soil type. The burrow ends in an unlined chamber nest.

Females lay two to four white eggs in the tropics, and up to seven eggs in drier climates. The incubation period (the time spent sitting on eggs) is eighteen to twenty-three days. Females do most of the incubating at night, while both share sitting duties during the day. Both parents share feeding of the young along with any helpers. Hatchlings are pink, blind, and naked. Their skin soon turns gray, eyes open, and spiny feathers appear. The nestling period (the time it takes young to leave the nest after hatching) is between twenty-four and thirty-two days. After one year, bee-eaters either breed or become a helper to a breeding pair.

BEE-EATERS AND PEOPLE

Overall, people do not affect bee-eaters in any significant way. However, bee-eaters are a great source of enjoyment to birdwatchers.

CONSERVATION STATUS

Bee-eaters are not threatened. However, because they eat only poisonous insects, which are often controlled by humans with the use of pesticides (chemicals used to control pests), they are vulnerable to the effects of such chemicals.



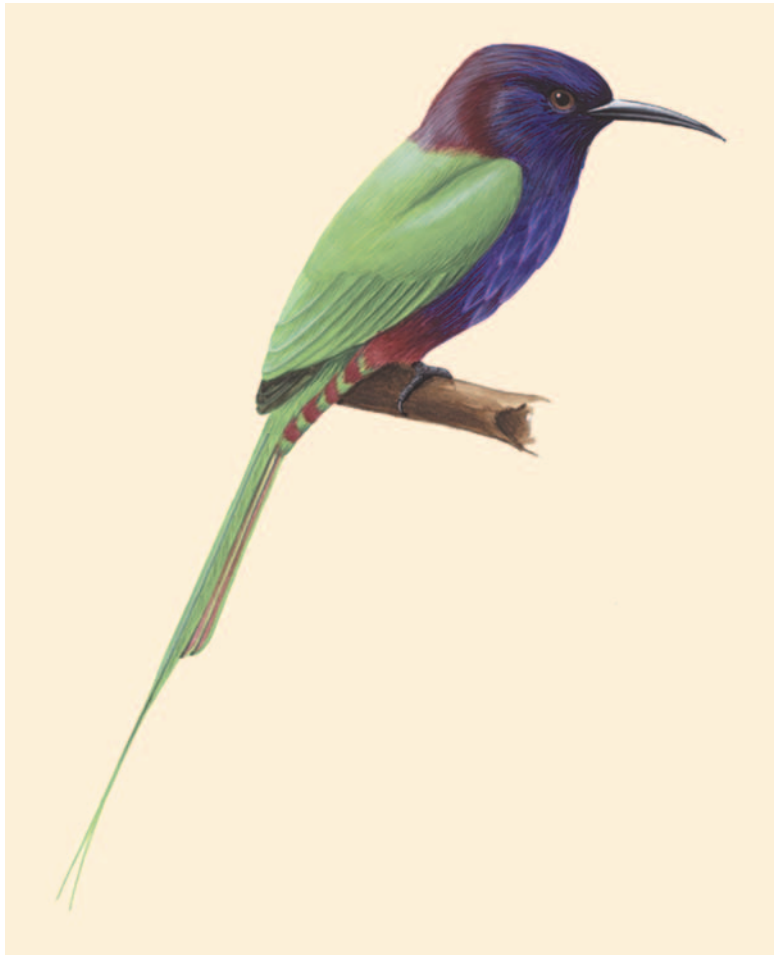
PURPLE-BEARDED BEE-EATER

Meropogon forsteni

SPECIES ACCOUNTS

Physical characteristics: Purple-bearded bee-eaters are easily identified from other bee-eaters because they have a purple-blue head, throat, and breast. They are colorful birds, with dark green upper-parts, wings, and tail streamers; dark brown lower belly; green and russet (reddish brown) tail feathers; blackish forehead and crown (the top of a bird's head); chocolate on the sides and back of the neck. The long, broad throat feathers hang over the breast, and the neck and nape feathers form a coat that is sleeked down or fluffed out. When flying, they look mostly green, with broad rounded wings, a longish tail, and short-to medium tail streamers. Purple-bearded bee-eaters are 9.8 to 10.2 inches (25 to 26 centimeters) long without

Purple-bearded bee-eaters dig burrows in steep banks near forest streams, cliffs, high-level roads, or banks by forest paths. The burrows serve as nests for the birds. (Illustration by Barbara Duperron. Reproduced by permission.)



tail streamers that can add up to 2.4 inches (6 centimeters) to its length.

Geographic range: Purple-bearded bee-eaters are the most restricted species, occurring only on the island of Sulawesi (formerly called Celebes), Indonesia.

Habitat: Purple-bearded bee-eaters are found in open areas of rainforests, often in the mid- and upper-canopy (treetop) levels of the forest, on the edges of forests, and in the lowlands where forests meet well-timbered farmland. They range from sea level to 6,070 feet (1,850 meters) in altitude.

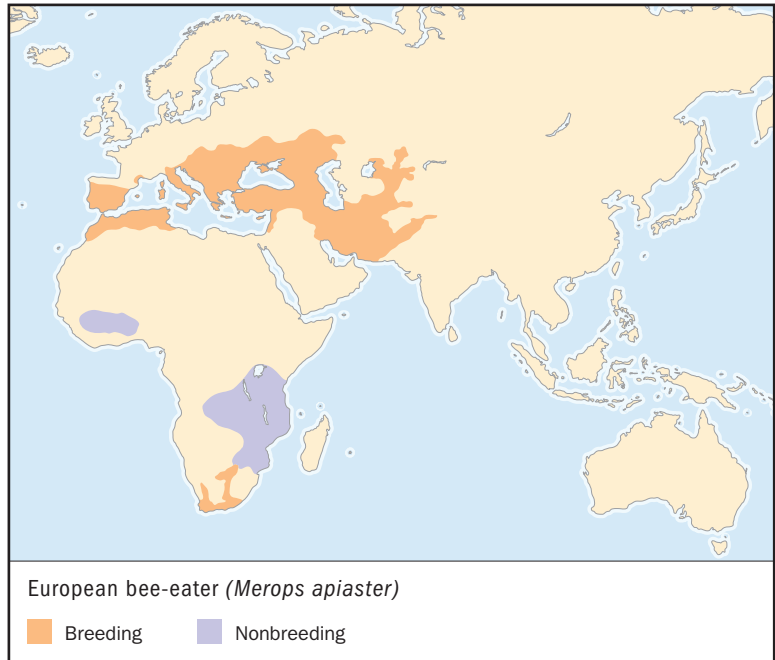
Diet: They eat flying insects, including bees, beetles, wasps, and dragonflies. Most of their feeding begins from perches located at the

middle and upper canopy of forests. After capturing their food, purple-bearded bee-eaters return to their perch where they beat their prey a few times against the perch.

Behavior and reproduction: Purple-bearded bee-eaters are sedentary birds (tending not to migrate), although they sometimes move to coastal areas for the rainy seasons, and then return to interior areas for dry seasons. They call out a quiet, shrill, high-pitched “szit,” or “peet.” They excavate burrows in steep banks located near forest streams, cliffs, high-level roads, or banks by forest paths. Little information is available on the reproduction processes used by the birds. However, it is believed that females reproduce at any time of the year.

Purple-bearded bee-eaters and people: Purple-bearded bee-eaters have no special significance to humans.

Conservation status: These bee-eaters are not globally threatened. ■



EUROPEAN BEE-EATER

Merops apiaster

Physical characteristics: European bee-eaters are considered one of the loveliest bee-eaters, with bright color patterns: blue underneath; bronze above; chestnut on top of the head; and golden-yellow around the throat and shoulder. Since this bird is usually seen flying, this color combination is not often seen clearly. Females are slightly paler than males. Juveniles are mainly green and lack any chestnut or gold in their feathers, but still possess pale yellow throats. Adults also have a dark eye stripe; a slender, pointed bill; small feet; and pointed central tail feathers. Adults are 9 to 10 inches (23 to 25 centimeters) long, excluding tail streamers that are about 0.8 inches (2 centimeters) long. European bee-eaters weigh between 1.6 and 2.8 ounces (44 and 78 grams).

Geographic range: European bee-eaters are found in northwest Africa from Morocco to Libya, Mediterranean islands, countries of the northern Mediterranean east through the Middle East to Pakistan, northern India and Afghanistan. A few birds are found in South Africa. Large numbers of European bee-eaters migrate seasonally between

breeding areas in Europe and Asia and their wintering grounds in tropical Africa and western India.

Habitat: European bee-eaters like warm, open habitats with rivers, sandy soils, pasturelands, scattered trees, and bushes. They are found in grasslands, open woodlands, pasturelands with scattered trees, and forests in drier habitats.

Diet: European bee-eaters eat mostly insects, mainly bumble bees, honeybees, and wasps, but over 300 species of insect prey have been recorded. They feed primarily from a perch, but may also feed while in flight. They usually hunt within 0.6 miles (1 kilometer) of their nest, but can be found up to 7.2 miles (12 kilometers) away.

Behavior and reproduction: European bee-eaters are sociable birds, giving out loud but attractive “quilt,” “prruip,” and “kruup” sounds, along with many others. They spend most of their time hunting for food, in graceful flight, but also spend some time perched on bare twigs and telephone wires. They are sometimes a solitary nester, but are more commonly found breeding in colonies, sometimes along with up to 400 other nests. Nests are located in earthen banks or cliffs, and usually consist of an unlined chamber at the burrow’s end up to 5 feet (1.5) meters in length. Females lay eggs during May in the southern part of their range, and in June and early July in Russia. South African populations begin breeding in October. Clutch sizes are the largest of any bee-eater, with up to ten eggs, but generally with a range of five or six. Cooperative breeding is common, with about 20 percent of nesting pairs using a helper.

European bee-eaters and people: People persecute European bee-eaters more than any other species of bee-eaters, especially when their territories overlap areas where beekeeping (keeping bees to harvest honey) is common. It is generally considered a pest in all of its range.

Conservation status: European bee-eaters are not globally threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Fry, C. Hilary, and Kathie Fry. *Kingfishers, Bee-Eaters and Rollers: A Handbook*. Princeton, NJ: Princeton University Press, 1992.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L.A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison, J. and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

family CHAPTER

ROLLERS Coraciidae

Class: Aves

Order: Coraciiformes

Family: Coraciidae

Number of species: 18 species

PHYSICAL CHARACTERISTICS

Rollers include three subfamilies: true rollers, ground-rollers, and the cuckoo roller. The three groups are medium-sized, brightly colored, and fairly large, stocky birds with a short necks; broad, strong syndactylous (sin-DACK-tuh-lus) feet, merged toes with no web in between; rounded wings; and short tails, though some species have tail streamers, a longer, central tail part. Sexes are similar or identical in color, depending on species. Rollers are 9 to 20 inches (22 to 50 centimeters) long, and weigh between 2.8 and 8.8 ounces (80 and 250 grams).

True rollers have plumage, feathers, of blue, blue-green, green, brown, or lilac, with olive, chestnut, or pink markings. Bills may be strong, arched, and hook-tipped, suited for grasping ground prey; or may be short and wide, suitable for catching flying insects. True rollers' wings are long and rounded, with tails that may be squared, slightly rounded, or somewhat forked, sometimes with longer outermost feathers.

Ground-rollers are more brown, buff or black in the plumage. They have rufous (reddish) or dark-green upperparts, simply patterned underparts, and bold facial patterns. Ground-rollers have large heads, strong bills, heavy bodies, short, rounded wings, long legs, and pointed tails.

Male cuckoo rollers are velvety gray; with a dark shiny green back, tail and wings; and a black eye stripe. Females and young birds are brown, with darker streaks.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

GEOGRAPHIC RANGE

Rollers range within Africa, southern Europe, and southern Asia to northeastern and southeastern Asia, and Australasia, east to the Solomon Islands.

HABITAT

Rollers live in forests, woodlands, savannas (flat grasslands), and within urban areas, preferring the tropics and subtropics.

DIET

Rollers eat a variety of foods such as insects, spiders, lizards, small mammals, and small birds. True rollers perch to wait for prey like arthropods, invertebrate animals with joined limbs, found around leaf litter or flying through the air. Ground-rollers eat mostly food found on the ground, capturing small vertebrates, animals with backbones, such as frogs and lizards hidden in the leaf litter or probing for prey with their bills into soft soils. Cuckoo rollers eat large insects and small reptiles that they find among trees and shrubs.

BEHAVIOR AND REPRODUCTION

Rollers perch evenly spaced within groups. True rollers gather into migrating flocks, and are territorial most of the year. They are usually seen singly or in pairs, sometimes in post-breeding families. When breeding, they are noisy with loud cackling calls that occur during daring maneuvers. During non-breeding seasons, the birds are quiet and slow. Ground-rollers are territorial, especially when feeding. When in danger, they sit quietly in a well-concealed position. They make brief, gruff-sounding calls mostly during breeding.

During courtship, true rollers use loud sounds while rolling during through the air. Bowing is performed between male and female pairs while perched and facing each other, with mating occurring afterwards. Unlined nests are usually located within tree holes, but also found in crevices (narrow cracks in rocks), rocky parts of mountains, and buildings. Clutches, groups of eggs hatched together, are three to six unmarked white eggs, with an incubation period, time needed to sit on eggs, of eighteen to twenty days. Females do the sitting, but males help out. Newly hatched chicks are naked and helpless, with small feathers first appearing around seven days. Full feathers occur between seventeen and twenty-two days. Both parents feed nestlings, young

birds unable to leave nest, for around thirty days, and for up to twenty days after fledging, learning to fly.

Ground-rollers breed during summers. Pairs defend their nesting territories, and courtship feeding of females by males is common. Nests are made in tree hollows, but some nest in chambers at the end of a burrow excavated, dug, by the birds. Two to four white eggs are laid. Incubation appears to be performed by the female, and both parents feed nestlings.

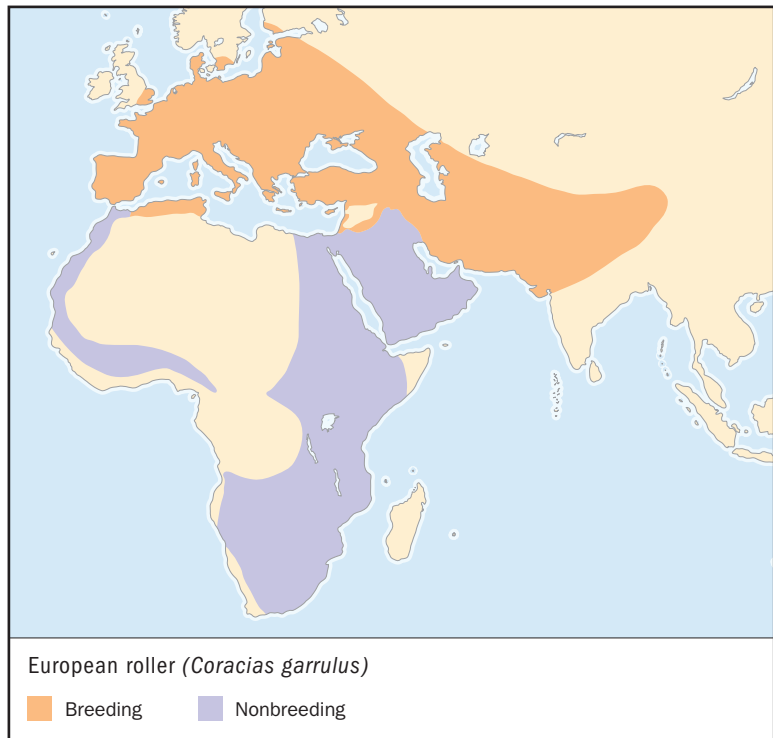
ROLLERS AND PEOPLE

People generally have little interest in rollers. Some exceptions occur; for instance, body parts of rollers are used in love potions, drinks supposedly used to increase sexual desire. Rollers have also been viewed as good omens. People hunt ground-rollers for food because they are easy targets.

CONSERVATION STATUS

True rollers are common throughout all or part of their ranges, with one species considered Vulnerable, facing a high risk of extinction in the wild. Ground-rollers have four species that are considered Vulnerable due to deforestation. Cuckoo rollers are generally common and survive in small, fragmented forest patches. However, they are being adversely affected by widespread land clearing.

SPECIES ACCOUNTS



EUROPEAN ROLLER *Coracias garrulus*

Physical characteristics: European rollers are heavily built, large rollers with no tail streamers. Their head, neck, and underparts are bright pale blue, with rufous to chestnut upperparts, blue square-tipped tail, and vivid blue wing patch. The throat and breast are streaked with white. They have a short black streak through the eye, and a brownish black bill with a white base. The two central tail feathers are dark olive-gray, with the remaining feathers greenish blue with darker bases. They are 12.2 to 12.5 inches (31 to 32 centimeters) long and weigh between 3.9 and 6.7 ounces (110 and 190 grams). Females and males look alike.

Geographic range: They breed throughout Europe, western and southwestern Asia, and the Middle East; and, while not breeding, live in the eastern half of Africa, and along the northern and central coasts of western Africa, and as far south as South Africa.

Habitat: They exist in open woodlands, wooded grasslands, cultivated fields, oak forests, pinewoods, river valleys, urban parks, and gardens of lowlands. They range from sea level up to about 2,000 feet (600 meters). They do not like open water; steppes, treeless, grass-covered plains; and plains, dry land with few trees. During breeding season, they are attracted to sunny lowlands.

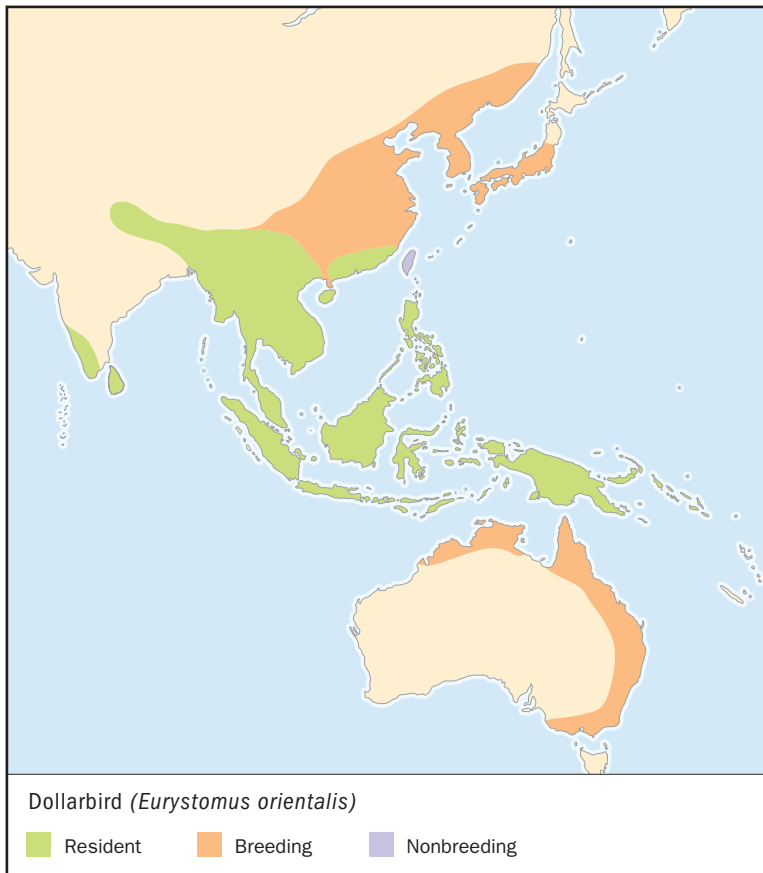
Diet: European rollers eat mostly insects such as beetles, grasshoppers, locusts, crickets, cicadas (suh-KAY-duhz), mantids, wasps, bees, ants, termites, flies, butterflies, and caterpillars. Occasionally, they eat scorpions, centipedes, spiders, worms, frogs, lizards, snakes, and birds. While on their perches, European rollers watch for ground prey. Seeing food, they expose long, broad wings as they attack. They then return to the perch. Before eating prey, they repeatedly strike the food against the perch. They also catch insects in midair. Undigested remains are regurgitated (re-GER-jih-tate-ud; brought up from the stomach) in pellets.

Behavior and reproduction: European rollers are often seen hunched on a lookout perch on a tree, post, or telephone wire. They migrate seasonally to Africa, mainly in the east and south. They are noisy birds, often calling out a short gruff “rack,” a chattering “rack rack rackrak ak,” or a screeching “aaaarr” (which is a sound of warning). They are noticeable while in their breeding territories. During wintering periods, they are quiet and slow moving birds. They breed in pairs, but loose flocks migrate together. They are active on warm days, but less active during rainy ones.

They form monogamous (muh-NAH-guh-mus) pairs, having only one mate, and they strongly defend their nests. Their courtship displays involve deep ascents followed by spectacular twisting dives that show off their wing colors. Croaking and rattling calls (like “ra-ra-ra-aaa-aaa-aaaaa-aaaar”) accompany the display. They breed from May to June, with females laying two to six (usually four) eggs in an unlined, usually pine or oak, tree hollow, crevice in rock faces, or hole in walls of buildings. The incubation period is between seventeen and nineteen days, performed totally by the females. Both parents feed chicks. The fledgling period, time while the young grow their flying feathers, is twenty-five to thirty days.

European rollers and people: People admire European rollers for their beauty and like them because they eat insects, pests to humans. However, they are still often hunted for food, sport, and taxidermy, the stuffing and mounting of animals in a lifelike state.

Conservation status: European rollers are not threatened—they still number in the millions—however their numbers continue to decrease in Europe. ■



DOLLARBIRD

Eurystomus orientalis

Physical characteristics: Dollarbirds are stocky, dark greenish-blue or purplish birds with a large head; short, thick neck; short legs; short-looking, square-ended tail; and short but broad, heavy red bill. They have broad and long wings with central tail feathers that are blackish with dark blue bases and outer feathers that are blackish with purple-blue edges and greenish-blue bases. Dollarbirds have white-silvery or pale blue “dollar”-like circles on their open wings, which is noticeable while flying. The forehead and chin are blackish brown; back of the neck and ears are very dark olive-brown; and back and rump are bluish olive. The throat is purple with narrow blue streaks; while the breast, sides, belly, undertail, and underwing areas are

green-blue. Their eyes are dark brown, while legs and feet are bright red. They are 9.8 to 11.0 inches (25 to 28 centimeters) long, and weigh between 4.0 and 5.6 ounces (115 and 160 grams).

Geographic range: Dollarbirds are located from southeastern Asia to the Philippines, Indonesia and the northern and eastern coastal lands of Australia.

Habitat: Dollarbirds reside in deciduous woodlands, evergreen forests, forest margins, savannas, farmlands (such as rubber and coffee plantations), urban parks, and gardens, up to elevations of 4,900 feet (1,500 meters). They favor hot lowlands and foothills.

Diet: They eat large insects that are captured in flight, especially beetles, crickets, mantids, grasshoppers, cicadas (suh-KAY-duhz),

shield-bugs, moths, and termites. Dollarbirds occasionally take insects from the ground. Once crushed by their bills, they are swallowed. They feed mostly in the late afternoon and evening.

Behavior and reproduction: Dollarbirds live alone or in pairs. For much of the day they sit inactively on a perch. They often wag their tail up and down when about to fly, but otherwise sit quietly, moving only the head. The birds migrate to higher latitudes from their normal residences in the tropics. They are rather silent, but occasionally are noisy, uttering a hoarse, raspy “chak,” or a series of “krak-kak-kak” or “kek-ek-ek-ek-ek-k-k-k”. Dollarbirds are noticeable with their high, rotating flights or when perched on top of high trees. They fly in large flocks when migrating or when feeding on swarms of flying insects.

They are monogamous birds that breed in the summer. The breeding pair will defend their nesting territory. Dollarbirds use loud calling and aerobatics, spectacular flying stunts, in courtship rituals. Females lay three or four eggs, which are laid in high tree hollows, sometimes in woodpecker holes. Nests are often used several years in a row. The incubation period is twenty-two to twenty-three days. Both parents feed the chicks. Parents and chicks leave for wintering areas when chicks are able to fly.

Dollarbirds and people: Dollarbirds have no known significance to humans.

Conservation status: Dollarbirds are not threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Fry, C. Hilary, and Kathie Fry. *Kingfishers, Bee-Eaters and Rollers: A Handbook*. Princeton, NJ: Princeton University Press, 1992.

Harrison, Colin James Oliver. *Birds of the World*. London, U.K. and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

family CHAPTER

HOOPUES

Upupidae

Class: Aves

Order: Coraciiformes

Family: Upupidae

One species: Hoopoe (*Upupa epops*)

PHYSICAL CHARACTERISTICS

Hoopoes (HOO-pooz) are medium-sized perching and ground birds that are especially popular because of their highly patterned plumage, feathers. They also have very long, thin, decurved, slightly bent, bills; small head; large, stiffened fan-like crest, tuft on top of head; broad, rounded wings; short, squared tails; and short legs. Bold plumage on the chest can vary in color between pinkish brown, pinkish orange, chestnut, and rufous (reddish), while feathers on the wings, back, and tail are black with bold white stripes. The particular widths of stripes depend on which continent the hoopoe is located. The crest and head are both tipped with black. The bill is shaped specifically so its muscles can move to easily open and close its bill while the bird searches for food. Males and females are very similar in appearance. Juveniles are duller in color than adults; with white wings that show a small amount of cream color and a crest and bill that is relatively short. Adult hoopoes are 10.2 to 12.6 inches (26 to 32 centimeters) long, and weigh between 1.3 and 3.1 ounces (38 and 89 grams).

GEOGRAPHIC RANGE

Hoopoes are widely found in northern, central, and southern Africa, Madagascar, Europe, and Asia.

HABITAT

Hoopoes inhabit lightly timbered temperate climates that have cold winters and warm summers. They prefer open and

phylum

class

subclass

order

monotypic order

suborder

▲ family



semi-open country with bare earthen patches or short grasses, usually with some trees. Such country include pastures, cultivated grounds, wooded farmlands, parklands, orchards, gardens, vineyards, woodlands, edges and clearings, steppes (treeless plains), plains (large amount of dry lands with few trees), dry and wooded savannas (flat grasslands), river valleys, foothills, scrublands, semi-deserts, and, in Southeast Asia, coastal dune scrublands. Within these areas, they look for cavities (hollow areas) in trees, walls, rocks, dirt banks, or termite mounds for their nests. Hoopoes stay away from damp areas. They range elevations up to 10,170 feet (3,100 meters), but normally are found below 6,560 feet (2,000 meters).

DIET

Hoopoes eat mostly insects, particularly soft larvae (LAR-vee; active immature insects) and pupae (PYOO-pee; developing insects found inside cocoons). Prey includes primarily ants, beetles, bugs, butterflies, dragonflies, flies, grasshoppers, grubs, termites, and worms. They also eat earthworms, centipedes, spiders, and woodlice, and sometimes eat frogs, lizards, and small snakes. Hoopoes hunt for prey primarily on the ground in short grasses and on bare soil by walking short distances, stopping



Hoopoes eat mainly insects. They usually search for them on the ground, but may sometimes make a short flight to catch their prey. (John A. Snyder/Bruce Coleman Inc. Reproduced by permission.)

to insert its long slender bill into the ground with the hope of finding food, and then walking off in a different direction. They sometimes probe under and between bark on trees; and other times dig small holes and turn over leaf litter, dry animal droppings, and other material on the ground in search of prey. Hoopoes also make short flights in the air to catch prey. Hoopoes feed alone or in pairs during the spring and summer breeding season. At other times, they feed in small groups of other hoopoes.

BEHAVIOR AND REPRODUCTION

Hoopoes fly with a distinctive pattern of irregular (often erratic), butterfly-like flapping of its wings. When coming to rest, they raise their crest, which remains flat during the time of flight. The crest, which normally rests folded within the back of its neck, is also raised when they become excited. Also when alarmed, they make a quiet chattering sound. They are able to easily climb upward even on rough surfaces. Hoopoes are diurnal birds (active only during the day), roosting in cavities at night. Hoopoes give out a soft “hoo-poo” and “oop-oop-oop” calls, which is easily heard over long distances, while puffing out of its neck feathers. During the breeding season, they are

usually found singly or in pairs, but at other times they are seen in family groups or loose flocks of up to ten birds. They are migratory birds over the northern parts of their range, and partially migratory elsewhere within their range. Northern populations of hoopoes winter in tropical areas of Africa, India, and Southeast Asia. The birds in the southernmost parts of their range rarely migrate.

Hoopoes are monogamous (muh-NAH-guh-mus), having one mate, and are strongly territorial while breeding. Breeding starts usually in late April. Males begin the courtship process several weeks before actual breeding, using a song to attract his female partner in a series of two to five loud “hoop” notes, which are often sung on posts. Males chase females, bringing food, and showing off possible nest sites. Male hoopoes locate holes in trees, walls, cliffs, banks, termite mounds, woodpecker holes, flat ground, and crevices, narrows cracks or openings, between rocks in order to use as nests. The entrance is narrow, forcing hoopoes to squeeze inside. Once located, males chase away all intruders on the ground and in the air, making this area his protected territory. Such locations use little or no nesting materials, but can be made up of plants, feathers, wool, and other similar substances, eventually making the nest cavity, hollow area, very smelly and unsanitary. Suitable nests may be reused for several years.

During courtship, males will feed the female partner just before mating. Afterwards, the pair often flies slowly throughout their territory, one behind the other, while raising and lowering their crests. Females usually produce one egg each day, with a clutch size, number of eggs hatched together, of four to seven eggs in tropical areas and five to nine eggs in temperate regions, with a maximum number of twelve eggs. The smooth, non-glossy eggs can vary in color from grayish, yellowish, greenish, or brownish. They are about 1.02 by 0.71 inches (2.6 by 1.8 centimeters) in size. The incubation period, time in which birds sit on hatched eggs, is from twenty-five to thirty-two days, with females performing the entire process of sitting on the eggs. Eggs are hatched at different times. At first, females feed and take care of newborn chicks, but later both parents feed and take care of the young. Males feed females while she is caring for the eggs and for the first week after the young have hatched. Fledglings, young birds that have grown feathers that are necessary to fly, begin to feed on their own after six days, but

remain with parents for many weeks, usually around twenty-eight days after hatching. Usually only one brood, young that are born and raised together, is raised each year, however up to three broods have been recorded. In the beginning young birds fly very clumsily in irregular curves, and walk awkwardly.

The young nesting birds use hissing sounds, poking upward with their bills, and striking with one wing in order to defend themselves from enemies. They also use very smelly secretions from body glands and sprayings of feces, solid body waste, to fend off attacks. To defend against predators, adults flatten themselves against the ground by spreading their wings and tails onto the ground, with their head raised backward and bill raised.

HOOPES AND PEOPLE

People like hoopoes because they eat many insects that are agriculture and forestry pests. Thus, hoopoes are widely protected by a variety of national laws. However, many hoopoes are still hunted in southern Europe and parts of Asia.

CONSERVATION STATUS

Hoopoes are not threatened, and are common and abundant in most of their range. They have, however, suffered diminished populations at the boundaries of their ranges, especially in Europe where most of their populations have declined over the twentieth century and into the twenty-first century. Their numbers have declined in Africa, Madagascar, and Asia due to previously productive land that has gradually turned into deserts and other lands that have been turned into farmland. A previous species, the giant hoopoe, has been extinct probably since the year 1600.

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Fry, C. Hilary, and Kathie Fry. *Kingfishers, Bee-Eaters and Rollers: A Handbook*. Princeton, NJ: Princeton University Press, 1992.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison, J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

Web sites:

“Hoopoe.” *Wikipedia, The Free Encyclopedia*. <http://en.wikipedia.org/wiki/Hoopoe> (accessed on April 24, 2004).

“*Upupa epops*.” Animals Online. <http://www.animals-online.be/birds/hoppen/hoopoe.html> (accessed on April 24, 2004).

family CHAPTER

WOODHOOPUES

Phoeniculidae

Class: Aves

Order: Coraciiformes

Family: Phoeniculidae

Number of species: 6 species

PHYSICAL CHARACTERISTICS

Woodhoopoes (WOOD-huu-puuz) are small- to medium-sized birds. Some species have a long, slender decurved, slightly bent, bill; others have straight bills; and still others have greatly down-curved bills. They have plumage, feathers, that is mainly black with glossy green or purple undertones; and have broad, rounded wings and a long, graduated, divided in steps of different lengths, tail. Some species have a white or brown head. Most species have patches, either bars or spots, of white across the wing and on the tips of the tail feathers. Woodhoopoes have long toes, short legs, and strong, thick hooked claws. They have dark brown irises, colored part, within their eyes. Females usually have shorter bills and tails than males, and young birds are duller in color than adults. Juveniles of all species have bills and feet that are black. In three species, the bill turns orange-red as they mature, as do the feet in two species. Adults are 8 to 15 inches (20 to 38 centimeters) long and weigh between 0.6 and 3.5 ounces (18 and 99 grams).

GEOGRAPHIC RANGE

Woodhoopoes range throughout sub-Saharan Africa, with a small number of birds in northeast Africa. They are one of the few bird families that are confined to Africa.

HABITAT

Woodhoopoes live in rainforests, forests, woodland, savannas (flat grassland), thornbush country, and arid steppes (dry

phylum

class

subclass

order

monotypic order

suborder

▲ family

plains that are often grass-covered) that contain adequate amounts of scattered trees. They avoid treeless areas, and only two species occur in the more northern areas of tropical forests. Woodhoopoes require areas that are heavily forested in order to roost and nest in tree holes, and to use its bark and twigs to hide their food.

DIET

They eat invertebrates, animals without a backbone, mainly insects and arachnids, eight-legged animals that includes spiders, scorpions, and mites, and their larvae (LAR-vee), active immature insects; along with some fruits and small vertebrates, animals with a backbone. Probing into crevices, narrow openings, and cracks, or prying off bark on the trunks and limbs of trees are their means of locating prey. Strong feet allow woodhoopoes to hunt at all angles, including hanging upside down, with the tail used as a brace. Larger species tend to search on larger branches; species with thicker, straighter bills dig and pry more often; and smaller species probe into the smallest holes on the smallest of twigs. Some species will also feed on the ground or catch flying insects in midair. Woodhoopoes do not drink water on a regular basis because they receive most of their needed moisture from their prey.

BEHAVIOR AND REPRODUCTION

Smaller-sized species of woodhoopoes are somewhat sedentary, tending not to migrate, but larger species tend to migrate more. Some larger species live in groups of five to twelve birds, making themselves noticeable when they interrupt their eating to make noisy sounds among the group. After a short period of time, they quietly return to foraging, searching for food. The small species tend to live only as pairs. All birds defend their territory with loud cackling calls, exaggerated bowing of the body, and rising of the tail. Such cackling sounds helps to maintain the identity and togetherness of the group, which usually consists of an extended family of parents, helpers, and young. Their broad, rounded wings and long, graduated tail allow skillful and, at times, rapid flights.

Woodhoopoes nest in tree cavities. Most cavities are natural holes, but old nest holes previously dug out by barbets and woodpeckers are also used. Barbets are small tropical birds that are brightly colored, with a large head, thick hairy bill, short rounded

wings, and short tail; related to the toucan. They rarely use holes in the ground or in buildings. Nests are unlined. Mating pairs are monogamous (muh-NAH-guh-mus), having only one mate. A male will feed the breeding female as a courtship ritual. Such feeding will continue throughout the nesting period, along with feedings from helpers. The female lays and incubates, sits on to provide warmth, a clutch, group of eggs hatched together, of two to five gray or blue-green eggs that are oval and pitted. The incubation period is seventeen to eighteen days, with a nestling period, time necessary to take care of young, of about thirty days. The female hatches the young chicks but later leaves and helps the others bring the chicks food. The nestlings have a prickly appearance due to growing feathers. Juveniles stay with the parents for several months after fledging, growing the feathers needed for flight, and sometimes act as helpers.

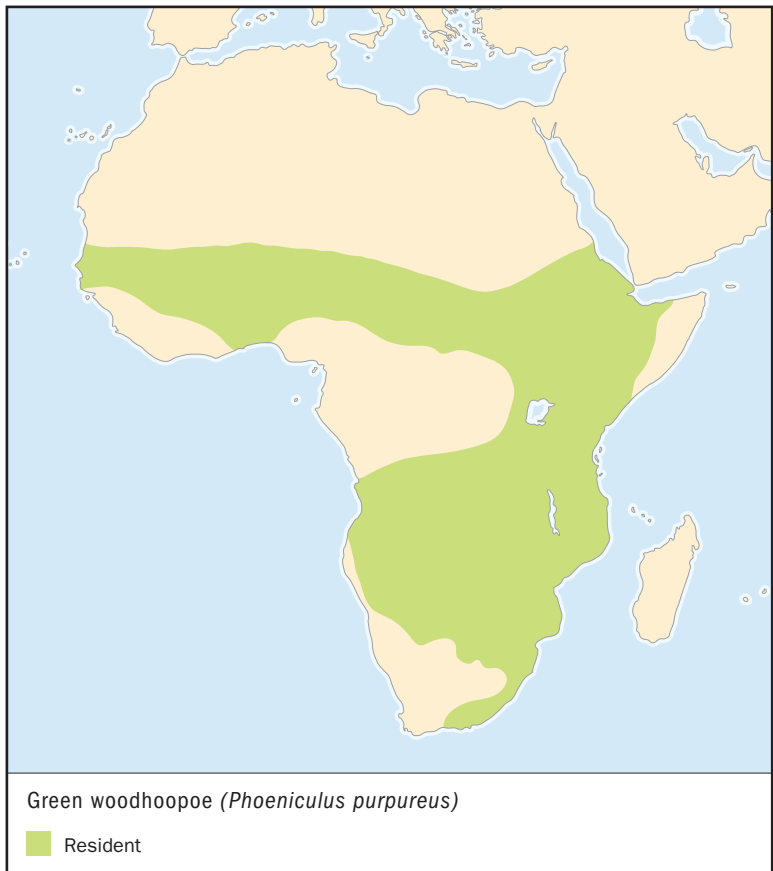
WOODHOOPES AND PEOPLE

Woodhoopes have no known significant importance to humans.

CONSERVATION STATUS

Woodhoopes are not threatened. In some areas, woodhoopes have been reduced by the collection of timber for fuel and building material.

SPECIES ACCOUNT



GREEN WOODHOPOE *Phoeniculus purpureus*

Physical characteristics: Green woodhoopoes, considered the largest of the woodhoopoes, are primarily black in color with variable green and purple glossy overtones. They have a blue head and throat; violet on the back of the neck; white spots on their flight feathers and at the tip of its tail; a white bar across the middle of the wings; and red bill and feet, with bills being black in some populations. They have short, strong legs and sharp claws for gripping bark firmly. The long, graduated tail is used, either closed or spread, as a support.

Green woodhoopoe bills are long, slender, and slightly curved. The bill of males is longer than that of females, with a male weight about



18 to 20 percent more than females. Juveniles do not contain iridescence, glossy, colors like the adults, and have short dark bills and dark feet. Most juvenile males and some females have brown or buff throats, with smaller number of tail spots than what are found on adults. Adults are 13 to 15 inches (32 to 37 centimeters) long and weigh between 2.0 and 3.5 ounces (54 and 99 grams).

Geographic range: Green woodhoopoes are one of the most widespread of all woodhoopoes. They range throughout much of sub-Saharan Africa.

Habitat: Green woodhoopoes are found in open woodlands, savannas, palm groves, along rivers within forests, wooded gardens, and dry, mixed scrublands that contain at least a few larger trees. They are found from near sea level to altitudes well over 6,560 feet (2,000 meters). Green woodhoopoes must live in areas that contain large enough trees, except for thick rainforests, in order to find cavities for roosting and nesting. They are not found in arid zones and dense forests.

Green woodhoopoes are social birds. They will often exchange food as part of their social behavior. (Kerry T. Givens/Bruce Coleman Inc. Reproduced by permission.)

Diet: Green woodhoopoes eat caterpillars, beetle larvae, spiders and spider eggs, adult and larval moths, and winged and un-winged termites. They occasionally eat centipedes, millipedes, small lizards, and small fruits. They are well suited for climbing on tree trunks and branches in search for food. Most often, they forage by probing within cracks or bark of tree trunks, branches, and twigs. Males search lower down on the tree, while females tend to forage higher where smaller branches, limbs, and twigs are located. Sometimes green woodhoopoes dig in animal dung found on the ground, catch insets in flight, or steal food from nests of other species. Prey is often pounded and rubbed against a branch before being eaten.

Behavior and reproduction: Green woodhoopoes are territorial birds. They live in social groups, often in groups of four to eight members, but occasionally in much larger groups of up to sixteen birds. They often follow one another in single file in short flights from one tree to another. Green woodhoopoes will often exchange food as part of their social behavior. They are frequently noisy birds, often defending their territory with loud cackling calls; rapid, exaggerated bowing movements; and strong movements of the tail up and down.

Breeding activities can occur in every month, but are more frequent in months that are wet. They will often nest in tree holes, either natural or old woodpecker holes, but sometimes in the ground. When nests occur in trees, the nest is usually up to 72 feet (22 meters) above the ground. When the weather is abnormally wet, usually in late summer, they will nest in buildings. The female will lay two to five eggs, and then incubate them for seventeen to eighteen days. The nestling period lasts about thirty days. Adult and juvenile helpers will assist the mating pair in feeding and other duties.

Green woodhoopoes and people: People and green woodhoopoes have little significance to each other. However, the birds are often found in gardens and parks.

Conservation status: Green woodhoopoes are not threatened. They are widespread and common throughout their range, including a number of large national parks. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Fry, C. Hilary, and Kathie Fry. *Kingfishers, Bee-Eaters and Rollers: A Handbook*. Princeton, NJ: Princeton University Press, 1992.

Harrison, Colin James Oliver. *Birds of the World*. London, U.K. and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

HORNBILLS

Bucerotidae

Class: Aves

Order: Coraciiformes

Family: Bucerotidae

Number of species: 54 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Hornbills are medium- to large-sized, stocky, and highly vocal birds that are described as flamboyant, very showy. They have long, oversized but lightweight, slightly decurved (down-curved) bills. The bills are located below noticeable casques (KASKS), horny growths. The casques come in various sizes; shapes, including bumps, ridges, or horns; and colors such as brilliant orange, yellow-gold, deep crimson, or shiny black. Experts think casques might be used to help support large bills, make calls louder, or attract mates.

Hornbills have patches of bare skin around the eyes and throat and long eyelashes on their upper lids. To support their head and large bill, they have strong neck muscles and two neck vertebrae, bones in the spinal column, connected together. Hornbill plumage, feathers, is not very colorful, usually with areas of black, white, gray, or brown. The color and size of plumage and the shape of the casque identifies the age and sex. Hornbills vary in size and shape, from 11.8 to 47.3 inches (30 to 120 centimeters) long, and weigh between 3.5 ounces and 13.25 pounds (100 grams and 6 kilograms). Males are larger and heavier than females and have bills that are up to 30 percent longer.

GEOGRAPHIC RANGE

Hornbills are found in sub-Saharan Africa; from India and continuing east through south and Southeast Asia; onto the Indonesian and Philippine archipelagos including New Guinea; and east to the Solomon Islands.

HABITAT

Hornbills inhabit deserts, rainforests, steppes (treeless plain, often semiarid and grass-covered), woodlands, savannas (flat grasslands), and mountains, but prefer forested areas to other locales. Hornbills must be near large trees in order to nest and feed. Different species prefer various habitats, allowing many species to live in the same area.

DIET

Hornbills eat a variety of food, from animals to fruits and seeds. They are omnivorous, eating both meat and fruit in their meals.

BEHAVIOR AND REPRODUCTION

Hornbills generally groom their feathers as their first activity after dawn, and then begin searching for food. They move in pairs, but some species move in family groups of three to twenty. When plenty of food is available, larger groups may come together. Bills are used for various functions including feeding, grooming, and nest-sealing. They are not considered as migratory birds, but are territorial for many species.

Hornbills display sounds that are described as the noise made by an approaching train. The sound is possible because hornbills do not have small feathers that cover their flight feathers; so wings allow air to pass through, producing train-like vibration sounds. These “whooshing” sounds come in different intensities depending on wing size, and are used to defend the territory and to maintain contact with group members.

Hornbills are believed to be monogamous (muh-NAH-guh-mus), having only one mate. Usually one breeding pair will be joined by earlier offspring who help raise the latest brood. Courtship begins when pairs fly together through the air, perch close to each other, groom one another, and exchange food.

Hornbills use an interesting nesting pattern. They build nests in holes, mostly natural cavities, hollow areas, in trees or rock crevices. However, unlike most other birds, all hornbills, except a few, seal the cavity entrance, leaving only a slit through which the female, and later her young, receive food from the male. The male brings mud to the female who use it, along with her saliva, to seal the opening. If mud is not available, the female will substitute her own feces, solid waste. Egg size and number, and incubation period, the time needed to sit and hatch the eggs, depends on female body size. Clutch size, number of eggs

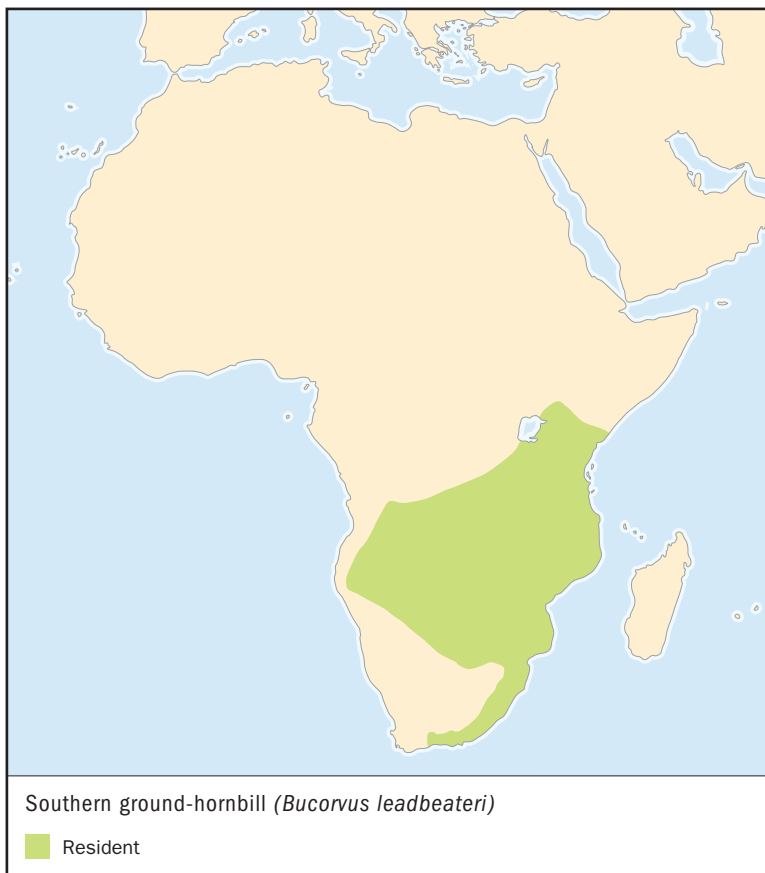
hatched together, ranges from two to three eggs in large hornbills, and up to eight for smaller hornbills. Incubation periods run between twenty-three and forty-nine days. Eggs hatch in intervals, with the chicks emerging naked, pink, and blind. Feather growth begins in a few days, with the skin turning black. Fledglings, young who have grown enough feathers to be able to fly, have underdeveloped casques and small bills, but after about one year, their appearance is like the adults.

HORNBILLS AND PEOPLE

People hunt hornbills for food and as a treatment for ailments. The birds play an important role in the customs and traditions of local people. Their feathers, heads, and casques are valued. They are often adopted as local mascots or state birds.

CONSERVATION STATUS

Two hornbill species are Critically Endangered, facing an extremely high risk of extinction in the wild. Two species are Endangered, facing a very high risk of extinction in the wild. Five species are Vulnerable, facing a high risk of extinction in the wild, and twelve species are Near Threatened, may become threatened with extinction.



SOUTHERN GROUND-HORNBILL

Bucorvus leadbeateri

SPECIES ACCOUNTS

Physical characteristics: Southern ground-hornbills are the largest in size and darkest in color of hornbill species. They are black with white primary feathers, the largest flight feathers, and red throat skin. Males have bare facial skin, and throat skin that can expand. Females have a blue patch on their red throat skin. When flying, white wing patches are visible. Juveniles are browner than adults, with black flecks in the primary wings, gray sides that reach to the bill, and pale gray-brown facial skin. Adults are 35.4 to 39.4 inches (90 to 100 centimeters) long. The male weighs between 7.6 and 13.6 pounds (3.5 and 6.2 kilograms) and the female weighs between 4.9 and 10.1 pounds (2.2 and 4.6 kilograms).

Southern ground-hornbills eat mostly small animals, and hunt in groups on the ground by walking, probing, pecking, and digging at the ground. (© Karl Ammann/Corbis. Reproduced by permission.)



Geographic range: They are found in eastern South Africa, Botswana, northern Namibia, Angola, and southern Burundi and Kenya.

Habitat: Southern ground-hornbills live in woodlands, savannas, and grasslands next to forests. They are found at elevations up to 9,800 feet (3,000 meters), preferring moist habitats.

Diet: Southern ground-hornbills are mostly carnivorous, eating only meat. They eat insects, grasshoppers, beetles, scorpions, and termites. During the dry season, they also eat insect larvae (LAR-vee), snails, frogs, and toads. Sometimes southern ground-hornbills eat larger prey, such as snakes, lizards, rats, hares, squirrels, and tortoises. At times, they will eat carrion (decaying animals), fruits, and seeds. The birds are able to eat these animals by using their powerful dagger-like bills to cut and tear their prey. Southern ground-hornbills hunt in groups from the ground by walking, probing, pecking, and digging.

Behavior and reproduction: Southern ground-hornbills roost in trees. They live in groups of up to eight birds, with each bird of the group sharing and defending a territory. The territory may be as large as 36 square miles (100 square kilometers). Nests are holes in trees or rock faces, lined with dry leaves brought by males. The entrance is not sealed. Females lay one to three eggs at intervals of three to five days, usually from September to December. The incubation period is thirty-seven to forty-three days. Adult and immature helpers

usually assist the dominant pair, and feed the nesting female. Chicks are hatched with pink skin that turns black within three days. At about eighty-six days, young birds fledge, or grow the feathers necessary for flight. Southern ground-hornbills remain with the parents at least until maturity, about four to six years.

Southern ground-hornbills and people: Local people think highly of southern ground-hornbills, but also eat them for food and medicinal, healing, purposes.

Conservation status: Southern ground-hornbills are not threatened. They are widespread and common throughout their geographic range except in some areas of South Africa and Zimbabwe where their populations are declining. ■



HELMETED HORNBILL

Rhinoplax vigil

Physical characteristics: Helmeted hornbills are large, dark brown and white birds with short red bills. They have high, nearly solid, heavy casques, and long, white tail feathers. Adults are 37.4 to 41.4 inches (110 to 120 centimeters) long, with females weighing between 5.7 and 6.3 pounds (2.6 and 2.8 kilograms) and males weighing about 6.7 pounds (3.1 kilograms).

Geographic range: Helmeted hornbills are found in South Myanmar and south Thailand, Malaysia, Sumatra, and Borneo.

Habitat: They prefer rainforests primarily at a habitat below an altitude of 4,900 feet (1,500 meters).

Diet: Helmeted hornbills eat many different types of figs.

Behavior and reproduction: They are believed to be territorial. The species has a distinctive loud call that includes a series of introductory “tok,” followed by a flowing laughter-like sound. Both sexes regularly engage in strange, aerial hammering and head-butting behaviors with the use of their casque, especially near fruiting fig trees.

Little is known about the reproduction of helmeted hornbills. Females breed throughout the year, but in southern Sumatra, fledglings are usually found between May and June.

Helmeted hornbills and people: People in Southeast Asian cultures consider the helmeted hornbill to be one of their most significant species. They are widely hunted for their feathers and casques (“ivory”) that are valued for traditional dances and ceremonial decoration. Illegal carved casques are still traded internationally.

Conservation status: Helmeted hornbills are considered Near Threatened and listed on Appendix I of the Convention in International Trade in Endangered Species (CITES). They are common where its range is left undisturbed. However populations are declining throughout most of its range due to hunting and forest destruction. ■



SULAWESI RED-KNOBBED HORNBILL

Aceros cassidix

Physical characteristics: Sulawesi red-knobbed hornbills are black with a white tail. They have a high, wrinkled, red casque. Necks are rufous, reddish, in males, and black in females. Their beaks are ridged and yellow with blue throat skin. Adults are 27.6 to 31.5 inches (70 to 80 centimeters) long. Female weight is unknown, and male weight is between 5.2 and 5.5 pounds (2.4 and 2.5 kilograms).

Geographic range: They are found in the Indonesian island of Sulawesi and nearby islands of Lembeh, Togian, Muna, and Buton.

Habitat: Sulawesi red-knobbed hornbills prefer lowland rainforests, particularly at altitudes below 3,600 feet (1,000 meters).

Diet: They eat a very wide range of fruits, mostly off of the top of the forest's canopy.

Behavior and reproduction: The Sulawesi red-knobbed hornbill is a non-territorial bird, that ranges across a wide area of land. They are usually seen in pairs, but also observed in large numbers, usually fewer than 120 individuals, while feeding at fruiting figs trees. They emit a loud barking call that can be heard for more than 1.2 miles (2 kilometers). Sulawesi red-knobbed hornbills assist in the scattering of seeds and growth of plants because they eat many fruits.

Nesting begins in June or July, at the end of the rainy season so young can feed during the fruit season. Nests may be built near others, often up to ten mating pairs per 0.4 square miles (1 square kilometer). Females usually lay two to three eggs, with an incubation period of between thirty-two and thirty-five days and nestling period of about 100 days.

Sulawesi red-knobbed hornbills and people: People believe that the feathers and casques of Sulawesi red-knobbed hornbills are filled with powers that give the owner protection from all types of problems. Their feathers and casques are, therefore, used to decorate head-dresses and drums for traditional warrior dances. Their meat is also eaten by people.

Conservation status: Sulawesi red-knobbed hornbills are not threatened. They are locally found with densities of up to 130 birds per square mile (51 birds per square kilometer). Distribution is slowly becoming more restricted due to the decline in forested areas. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Fry, C. Hilary, and Kathie Fry. *Kingfishers, Bee-Eaters and Rollers: A Handbook*. Princeton, NJ: Princeton University Press, 1992.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Stattersfield, Allison, J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

WOODPECKERS AND RELATIVES

Piciformes

Class: Aves

Order: Piciformes

Number of families: 6 families

order

CHAPTER

PHYSICAL CHARACTERISTICS

Woodpeckers and their relatives make up the order Piciformes, which includes six families of birds that nest in cavities (hollow areas within a rock or tree): jacamars (Galbulidae); puffbirds (Bucconidae); barbets (Capitonidae); honeyguides (Indicatoridae); woodpeckers, wrynecks, and piculets, (Picidae); and toucans (Ramphastidae).

Although the six families look very different, most piciform birds share a common adaptation that helps them live in trees. This special feature is zygodactylous (zye-guh-DACK-tuhl-us; “yoke-toed” or “X-shaped”) feet, which have two toes in front and two toes behind. With this arrangement, the birds can easily grab onto bark while hopping along branches and running up and down tree trunks. Along with this special feature, woodpeckers and their relatives also have similar jaw muscles and tongues, and do not have down feathers (except the jacamars). The tongue is capable of sticking out of its bill up to 4 inches (10 centimeters) in the green woodpecker, allowing it to take insects from deep cracks and crevices.

Piciforms are small- to medium-sized birds. They also share similar skeletal features, especially with the bones of the vertebrae (spinal column), sternum (breastbone), and ribs. Many members have heavy, sturdy bills, but the general size and shape of the bills varies widely. Jacamars have longish pointed bills; puffbirds have large, broad, often hooked bills; barbets have large, generally heavy, sometimes notched bills; woodpeckers have strong, tapering, often chisel-tipped bills; honeyguides

phylum

class

subclass

● **order**

monotypic order

suborder

family

have relatively short bills that can be either stubby or pointed; and toucans have huge, colorful bills. The colorful plumage (feathers) found on most of the birds is very different among all of the piciform birds. However, they almost always contain combinations of black and white with accents of red and yellow.

Males and females usually look alike, but with some small differences in the color of nape (back part of neck) patches and the presence or absence of feathers around the bill, or what is called their “moustaches.” One exception is Neotropical barbets, which show a great difference between males and females with regard to plumage color and pattern. Woodpeckers (one of three groups in the family Picidae) are unique within the family, order, and, in fact, among all birds in that they have strong, extra-stiff tail feathers that are used to brace themselves against tree trunks while climbing vertically or hammering with their beaks. Barbets also use their tail as a brace, but only while digging nest cavities. Woodpeckers and relatives are 3 to 22 inches (8 to 56 grams) long and weigh between 0.3 and 20 ounces (8 and 569 grams).

GEOGRAPHIC RANGE

Even though they do not migrate, piciform birds make up one of the most widespread bird orders, mostly due to the woodpeckers that are found on all the world’s continents except for Antarctica and Australia. The other piciform families are less widely distributed; the jacamars, toucans, and puffbirds are only found in the New World tropics, and honeyguides only found in Southeast Asia and Africa. Barbets are found in both the tropics of the New World and the Old World.

HABITAT

Piciforms inhabit forests and woodlands, mostly in tropical environments. They are arboreal—that is, they live in trees. Many of the species prefer mature forests with a closed canopy, meaning the tallest trees’ leaves let little light onto the forest floor. However, some species prefer open, fragmented forests and woodland savannas (flat grasslands) while other species like forest edges, stream banks, grasslands, orchards, and parks.

DIET

Woodpeckers and their relatives eat a variety of foods and therefore, have a big difference in bill structure. Woodpeckers,

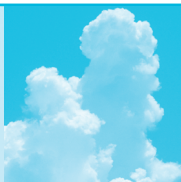
jacamars, honeyguides, and puffbirds eat mostly insects and their larvae (LAR-vee; active immature insects), but some woodpeckers also eat fruit and nuts. Honeyguides also eat beeswax from beehives. Toucans and barbets eat mainly fruits, but do feed insects and other similar foods to young. Jacamars and puffbirds locate prey while in the air, eating mostly butterflies (for jacamars) and flying beetles (for puffbirds). Woodpeckers and their relatives also catch their prey with different techniques: taking them from leaves, branches, and tree trunks; probing into bark crevices and removing bark; drilling holes to insert tongues; carving off large pieces of bark; pecking funnel-shaped holes into ants' nests; or catching prey in flight. Their sturdy, stout beaks allow them to find prey in wood and other similar materials.

BEHAVIOR AND REPRODUCTION

Woodpeckers and relatives are not considered very social birds, except for a few species. They are rarely seen on the ground or flying in the air, but are mostly found searching for food, eating captured prey, nesting, raising young, and roosting in trees. Most piciform birds do not migrate, move seasonally, but remain in their home range throughout the year. However, a few species migrate many miles between their breeding and wintering areas. A male-female pair will breed alone, but will maintain their bond—especially for woodpeckers, puffbirds, and barbets—throughout the year as they protect their territory. Some species of toucans form small flocks while foraging for food, and honeyguides and barbets come together at times when there is plenty of food available.

Piciforms are good climbers but weak flyers, except for honeyguides who are strong, acrobatic birds. Woodpeckers and relatives communicate in many different ways. They ruffle their crown feathers, spread their wings, sway the head, hop and dance about, and tap and drum their bill on tree trunks and branches.

Piciforms have two unique and very unusual behaviors that are unknown anywhere else in the bird community. First, woodpeckers and a few species of barbets communicate to one another by “drumming” (that is, tapping or hammering) rhythmically on hollow trees or other such structures in particular ways (depending on the species). Second, honeyguides, as their name says, “guide” animals such as honey badgers, baboons, and humans to bees' nests with the use of calls and short flights to the nests. When one of these animals is drawn to a beehive



DRUMS OF WOODPECKERS

All woodpeckers tap or “drum” their bills rapidly against wood in order to defend their territory and to attract mates. This drumming is used instead of songs in most species. The length, speed, frequency, and loudness at which a particular woodpecker drums often identify a particular species. However, the quality of the drumming sound often depends on the type of wood on which the woodpecker is tapping.

and breaks it open, the honeyguides help themselves to the beeswax.

Woodpeckers and their relatives are territorial, living in individual, pair, or family territories. They often defend a territory even from their own species. They display several courtship activities; among them, drumming and tapping on trees in specific patterns, flights into the air, and expressive calls to attract a mate. In fact, the black woodpecker taps about forty-three times within a two and a half-second period. They nest (and roost) in cavities, with some families laying their eggs in the nests of other hole-nesting species such as woodpeckers and barbets. The type of cavity used varies among the six families. Some species of jacamars and puffbirds dig out decayed trees among former termite nests, while other species dig burrows in soil, often along riverbanks. Barbets and wood-

peckers use their strong, sharp beaks to hammer out nest cavities in rotting trees. Other birds often take over such nests, making woodpeckers and their relatives helpful to such birds. The large species of toucans use natural holes in trees, while the smaller species often drive out woodpeckers from newly dug holes, and then enlarge the holes to suit their needs. They will reuse the nests for many years.

Almost all woodpeckers and their relatives lay white eggs. During the incubation period, the mating pair will nest at intervals of thirty to 150 minutes. The nestling period is eighteen to thirty-five days. The whole family breaks up from one to eight weeks after the young leaves the nest.

WOODPECKERS, RELATIVES AND PEOPLE

People have historically used feathers from toucans and woodpeckers for ceremonial ornaments. Humans hunt many of the larger species for food. Woodpeckers and relatives play an important role in the forest ecosystem, helping to control insects and the cycle of decay and regrowth of plants and animals. The blue toucan is well known in some countries as the mascot for a popular breakfast cereal, while Woody the Woodpecker has been a popular cartoon character for many decades.

Many homeowners, however, consider woodpeckers as pests because of the damage done to homes and other building structures by the use of their bills. For the most part, scientists regard piciform birds as beneficial to the environment. Toucans and barbets greatly help to scatter seeds. Woodpeckers help to control pest insects in forests, while holes pecked out in trees help other birds and some animals such as squirrels in finding nest locations.

CONSERVATION STATUS

According to recent research, fifteen species (of a total of 383 species) of piciform birds are classified as Critically Endangered, Endangered, or Vulnerable, at an extremely high, very high, or high risk of extinction. Another twenty-eight species are classified as Near Threatened. Experts on the birds warn that even though fewer than 4 percent of the birds are threatened, continued loss of habitat greatly harms the ability of the birds to reproduce and live. Decreased numbers of piciformes have also occurred due to hunting and capture for pets and other human activities. In fact, collecting of some species for museums is believed to have contributed to the extinction of some of those species.

FOR MORE INFORMATION

Books:

Alsop III, Fred J. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, J., A. Elliott, J. Sargatal, J. Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, et al. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

JACAMARS

Galbulidae

Class: Aves

Order: Piciformes

Family: Galbulidae

Number of species: 17 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Jacamars (ZHAK-uh-mahrz) are glossy, graceful-appearing birds that look like hummingbirds but are really related to woodpeckers, puffbirds, and toucans. They are very noticeable birds because of their jewel-like colors and long, sharp bill. Their bright plumage (feathers) consists of metallic green or blue upperparts, light patches on their throat or breast, a metallic green head, and reddish to dull brown or blackish underparts. Some species have color differences ranging from purple to red or chestnut brown. In many species, the bill is three times as long as the head.

The birds have short legs (except for one species) and zygodactyl (zye-guh-DACK-tuhl) feet (two toes face forward and two point backwards), which helps them grab branches and food while hunting. Unique features of this family include a long appendix (small outgrowth from large intestine), no gall bladder (sac that stores bile), a bare preen gland (oil-secreting sac at tail base), and a long, thin tongue. They have a long tail with ten to twelve tail feathers that are of different lengths and short wings with ten primary feathers. Males and females have similar plumage, although some female species are less colorful on head and neck. Adults are 5.1 to 12.2 inches (13 to 31 centimeters) long.

GEOGRAPHIC RANGE

Jacamars range from southern Mexico in Central America to northern Argentina in South America.

HABITAT

Jacamars live near tropical rainforests, stream or riverine (around a river) forests, and savanna (flat grassland) woodlands. They especially prefer Neotropical rainforests, the geographic area of plant and animal life east, west, and south of Mexico's central plateau that includes Central and South America and the West Indies. They are found generally at low altitudes, at the edges of forests, areas of fallen trees and clay or sandy stream banks, and within areas that contain colorful butterflies.

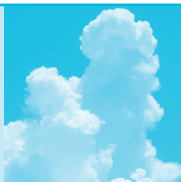
DIET

Jacamars prefer to eat large, showy, flying insects such as blue morpho butterflies, hawk moths, and venomous insects such as wasps, ants, and sawflies. Their diet also consists of other types of butterflies and moths, dragonflies, and flying beetles. They grab prey out of the air with their long, sharp (forceps-like) bill. They do not like butterflies that use body chemicals to defend themselves.

BEHAVIOR AND REPRODUCTION

Jacamars make expert maneuvers (mah-NOO-verz) as they swoop down from perches to capture colorful prey in mid-air. They spend most time on branches, staying alert for flying insects. After catching prey, jacamars grab the winged insect away from its wings or stinger in order not to become blinded by its fluttering wings or injured by its stinger. After perching, they beat it against a tree branch to kill it, and then remove the wings and stingers before eating it. They live generally in pairs, perching and hunting in the same area. Some species join in small family groups. Jacamars use a variety of calls to communicate, such as trills, squeals, whistles, and short songs, which are generally considered pleasant.

Male jacamars use a series of sharp calls during breeding season to attract a mate. The monogamous (muh-NAH-guh-mus; having one mate) pair builds nest holes in some species, while in other species only females do the work. The birds sometime drill holes for nests in deep riverbanks, using their bill to break up the soil and then their feet to remove soil by kicking it backwards. Other nest locations are on earthen banks or roots of fallen trees, while some use termite nests if other sites are unavailable. The nest occurs at the end of the tunnel in a horizontal, oval-shaped chamber. Tunnels are 12 to 36 inches (30



RUFIOUS-TAILED JACAMARS, OR “NEEDLE BEAKS”

The local name for rufous-tailed jacamars in northern Pantanal (a region in southwestern Brazil) is *bico de agulha*, which means “needle beak.” This nickname is in reference to the species’ long bill that helps in getting a hold of a butterfly’s body and keeping it away from their large flapping wings that might blind them. The thin bill also helps in catching and eating bees without getting stung in the face.

to 91 centimeters) long and about 2 inches (5 centimeters) wide. No materials are used for the nest, although eggs are often covered with a layer of partially digested food brought up from the parents’ stomachs. Nests are used many times.

Females lay one to four round, glossy, white eggs that are not marked. Both parents incubate (sit on) the eggs during the day for one to three hours at a time. At night, the female incubate alone while the male defends the nest. Jacamars seldom leave eggs alone. While the female sits on the eggs, the male will feed his mate several times a day. The incubation period (time that it takes to sit on eggs before hatching) is twenty to twenty-three days. Newborn jacamars are born with white down. Both parents feed the young with insects. The nestling period, or the time it takes to take care of the young unable to leave the nest, is nineteen to twenty-six days.

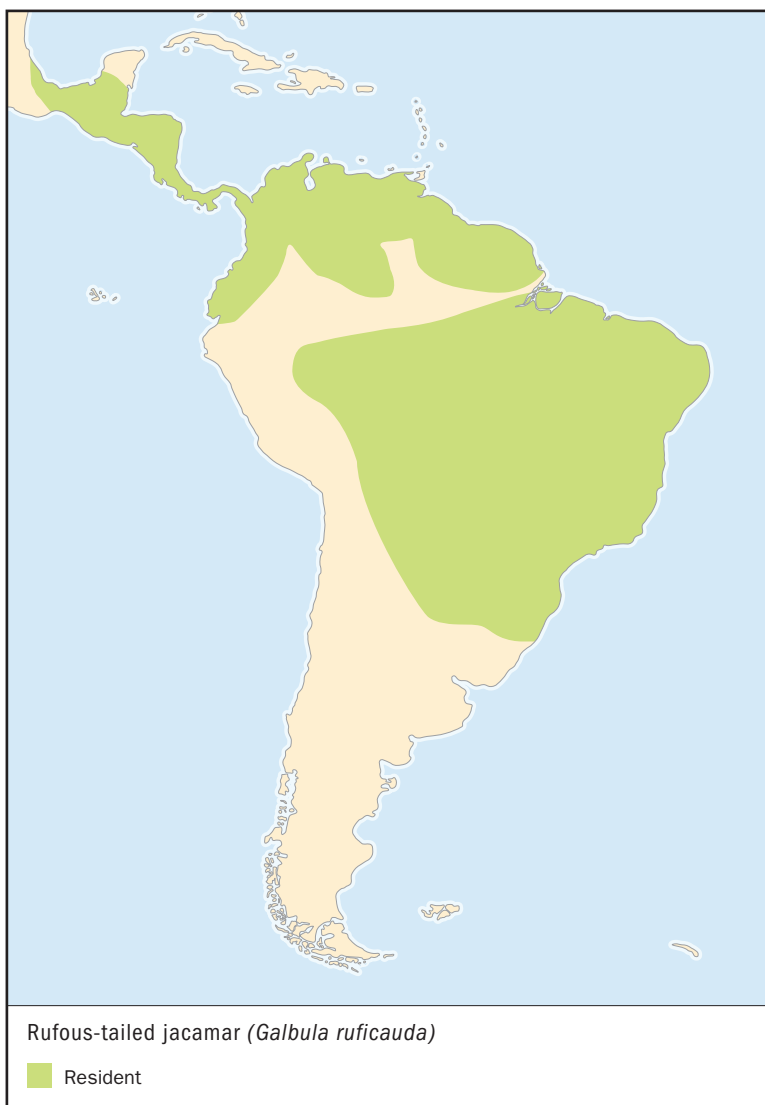
When they are ready to leave the nest, their plumage looks like the parents.

JACAMARS AND PEOPLE

The name jacamar is derived from the Tupi word *jacama-ciri*, which is used by Brazilian natives.

CONSERVATION STATUS

The three-toed jacamar is listed as Endangered, facing a very high risk of extinction, and another species, the coppery-chested jacamar, is listed as Vulnerable, facing a high risk of extinction. All species of jacamars are threatened by habitat loss. For example, in Brazil intensive clearing of vegetation in forests has caused a decline in populations.



RUFOUS-TAILED JACAMAR

Galbula ruficauda

Physical characteristics: Rufous-tailed jacamars have metallic coppery green upperparts, pale buffy chins, a white or buff patch on the throat, which is sometimes speckled green, rufous (reddish) to chestnut underparts, blackish primary feathers, and long graduated central

SPECIES ACCOUNTS

tail feathers. Females are slightly duller and paler than males, with a cinnamon-buff chin and throat and dark cinnamon-buff underwing coverts (small feather around base of quill). They have a very long, slender bill, sometimes called “needle beak”, that is about 2 inches (5.1 centimeters) long. Adults are about 7.5 to 9.8 inches (19 to 25 centimeters) long and weigh between 0.6 and 1.0 ounces (18 to 28 grams).

Geographic range: Rufous-tailed jacamars are probably the most widespread jacamars with a distribution from southern Mexico to northern Argentina including Mexico, Costa Rica, Ecuador, Colombia, Brazil, Argentina, and Trinidad and Tobago.

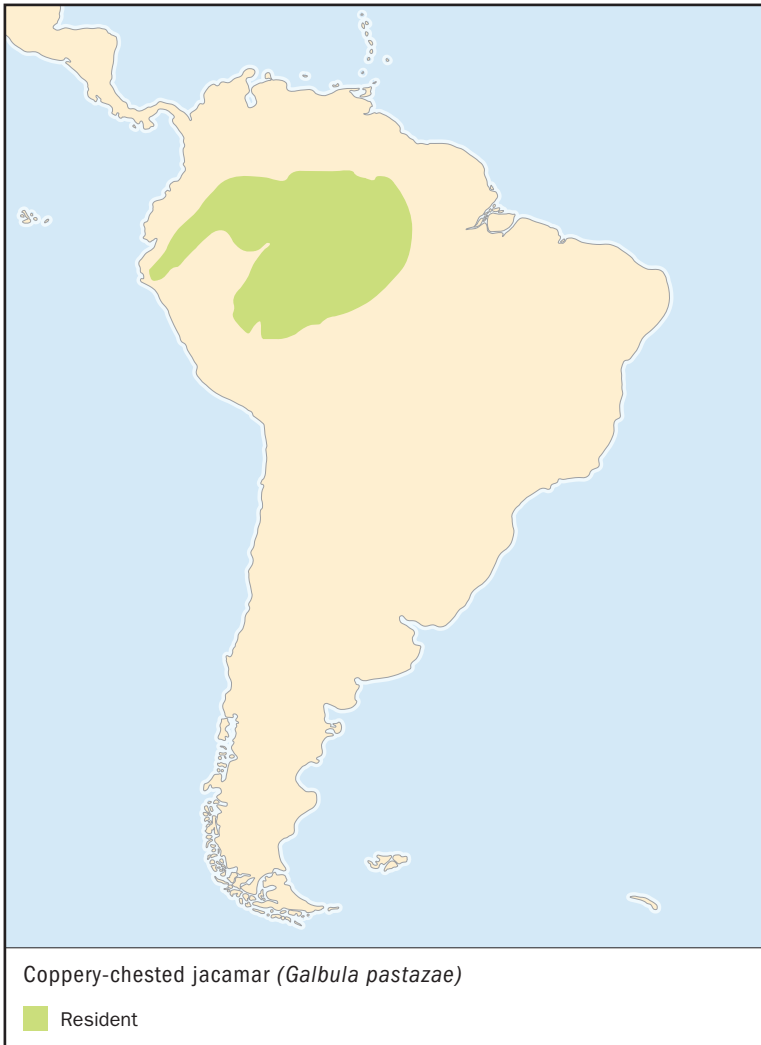
Habitat: Rufous-tailed jacamars are found on the edge of forests, in woodlands and thickets, and near streams and rivers.

Diet: Their diet includes flying insects that are caught in midair. Once caught, they beat the food against a branch before eating it.

Behavior and reproduction: Rufous-tailed jacamars live alone or in pairs, and like to forage from shrubbery near the ground. They do not migrate, but they do make short journeys. The birds signal danger or anxiety with a sharp trill. Males regularly feed females during courtship. They use former termite nests or earthen banks for their breeding sites. Both mates and females dig out nests to a depth of 7.9 to 19.7 inches (20 to 50 centimeters). Females lay one to four white eggs in ground-hole nests. The incubation period is nineteen to twenty-three days, while the nestling period is nineteen to twenty-six days. Both males and females incubate and take care of young. Nestlings hatch with whitish down feathers and are fed insects, especially butterflies.

Rufous-tailed jacamars and people: There is no known significance between people and rufous-tailed jacamars.

Conservation status: Rufous-tailed jacamars are not threatened. They are widespread and common, being able to change the way they live while in different habitats. ■



COPPERY-CHESTED JACAMAR

Galbula pastazae

Physical characteristics: Coppery-chested jacamars have metallic green upperparts, a dark rufous colored-throat, dark brown eyes, a distinctive yellowish orange eye ring, a copper-colored tail, and grayish feet. Males and females look alike except that females have a dark rufous-colored throat, and less visible coloring around the eyes. Their



Male and female coppery-chested jacamars sit on their eggs and care for the chicks when they hatch. (Illustration by Wendy Baker. Reproduced by permission.)

heavy bill is about 2 inches (5.1 centimeters) long. Adults are 9.0 to 9.5 inches (23 to 24 centimeters) long, and weigh about 1.1 ounces (31 grams).

Geographic range: Coppery-chested jacamars are not seen very often because there are not very many of them. They have been seen at a few sites in Ecuador, southern Colombia, Amazonian Brazil, and along the eastern slopes of the Ecuadorian Andes at altitudes of up to 5,100 feet (1,550 meters), the highest elevations of all jacamars.

Habitat: They are found in montane (mountain) tropical rainforests.

Diet: Their diet consists of a wide variety of flying insects. They prefer to hunt from one favorite perch, watching carefully for possible prey. When seeing a possible target, they capture the flying insect as it flies through the air.

Behavior and reproduction: Coppery-chested jacamars are very alert hunters, as are all jacamars. They give a series of three to five loud calls such

as “pee pee-pee-pe-pe-pee-pee.” Females lay one to four white eggs in curved ground-hole nests that are carefully hidden. When born, young are covered with white down. The incubation period is twenty to twenty-three days. Males and females share in incubation activities, along with taking care of the chicks as they grow.

Coppery-chested jacamars and people: There is no known significance between people and coppery-chested jacamars.

Conservation status: Coppery-chested jacamars are listed as Vulnerable. There are few areas where coppery-chested jacamars are found and their populations are low. They are found mostly in Colombia and the eastern slope of the Andes. Their populations are being reduced due to habitat loss, mainly from the loss of forested areas. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

Steve Metz Photography. "Rufous-tailed Jacamar." <http://www.stevemetzphotography.com/photo%20pages/Trinidad&Tobago/Rufous-tailed%20Jacamar.htm> (accessed on July 19, 2004).

PUFFBIRDS

Bucconidae

Class: Aves

Order: Piciformes

Family: Bucconidae

Number of species: 32 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Puffbirds are related to jacamars, but lack the iridescent (brilliant, shiny) colors of those birds. Puffbirds have a small- to medium-sized body, a large head, large eyes, short neck and a sturdy, flattened, slightly curved or hook-tipped bill (bills are more streamlined in some species). They have short and rounded wings, and a short and narrow tail, although some species have broader and longer tails. The swallow-winged puffbird has more tapered wings and a shorter bill than that of the other puffbird species.

Their mostly brown plumage (feathers) is soft and loose, and is not as colorful as jacamars' plumage. However, it has a very attractive pattern consisting of white, buff, rufous (reddish), brown, and black colors, especially with its sharp breast bands and streaked, barred, or spotted underparts. Their feet are small and zygodactylous (zye-guh-DACK-tuhl-us; two toes facing forward and two turned backward). Males and females look nearly the same, except for two species. Adults are 5.1 to 11.4 inches (13 to 29 centimeters) long and weigh between 0.5 and 3.7 ounces (14 and 106 grams).

GEOGRAPHIC RANGE

Puffbirds range from southern Mexico in Central America to northern Argentina and Paraguay in South America. They are not found on any islands off the coasts of these countries.

HABITAT

Puffbirds are found from dry to humid forests, lowlands, open woodlands, and wooded savannas (flat grasslands). They are not often found within the deep parts of the forest. The birds are usually found in areas below 3,280 feet (1,000 meters) in elevation, but some species are found in areas that rise up to 9,500 feet (2,900 meters). Puffbirds are found mainly in northern South America, particularly in the area surrounding the Amazon River. Most birds are found around the forest edges, in areas where trees have fallen, along streams and lakes, and inside clearings. They especially like locations where plenty of perches are available and many vines hang down from the trees.

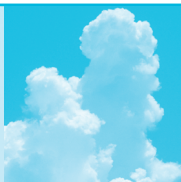
DIET

Because puffbirds are difficult to locate, little is known about their eating habits. It is believed that they eat mostly insects. Most species also eat arthropods (invertebrate animals with jointed limbs), along with small frogs, lizards, and snakes. Some species eat small amounts of fruits, berries, and buds, but mostly only in species that live at high elevations. They hunt for food only within the trees, going up to 65 feet (20 meters) to catch prey.

BEHAVIOR AND REPRODUCTION

Puffbirds are arboreal birds, meaning that they live in trees. They perch motionless in trees for long periods waiting for prey to approach. When flying, puffbirds fly quickly and swiftly on whirl-sounding wings. They defend their territory throughout the year with sounds that tell outsiders they are close by and to stay away. They are generally solitary birds, although some species are found in small family groups. Vocal sounds are also used to attract mates. Their voice is thin and ring-like, and can range from weak to loud, rarely being pleasant. Puffbirds do not seem to be migratory birds, yet some species that live at high altitudes or at the southernmost edge of their geographic range do migrate in response to changes in seasons.

Puffbirds are monogamous (muh-NAH-guh-mus), meaning that they have only one mate. They breed at various times throughout their ranges, depending on the amount of rainfall. It is believed that nests are made from cavities that are dug out of former termite and ant beds and sometimes out of abandoned nests of other birds. Some nests are burrowed into sand or soil, while others are made in tree holes. Both members of the mating



PUFFED UP PUFFBIRDS

Puffbirds were given their name because of their ability to “puff up” their feathers when alarmed. The combination of their large head, short tail, and often loose feathers also gives them a “puffy” look.

pair generally dig nests. Nest cavities vary in length from 20 to 60 inches (50 to 150 centimeters) with larger species digging longer cavities. Cavities end in a rounded chamber that is usually not lined with any materials but can be lined at times with leaves or grass. Some species place leaves around the entrance, probably to hide the opening.

Their small, white unmarked eggs can vary from dull to glossy and are usually laid in clutches (groups of eggs hatched together) of two to three, sometimes four. The incubation period (length of time needed to sit on eggs and warm them in order to hatch them) is unknown in most species. Both

sexes incubate the eggs and only one brood (young birds that are born and raised together) is raised each year. Hatchlings (newly born birds) are born blind and naked, but are still able to crawl to the entrance on their first day of life in order to take food from their parents. The fledgling period (time it takes for feathers to develop in order to fly) is believed to be twenty to thirty days. Young birds remain in their birthing territory for about one year.

PUFFBIRDS AND PEOPLE

There is no significant relationship between people and puffbirds.

CONSERVATION STATUS

One species, the sooty-capped puffbird, is listed as Near Threatened, in danger of becoming threatened with extinction. Generally, all puffbird populations are declining throughout South and Central America mostly because their forested areas are growing smaller.



WHITE-NECKED PUFFBIRD

Notharchus macrorhynchos

Physical characteristics: White-necked puffbirds look a little bit like kingfishers, being identified mainly by their white forehead and wide, glossy black breast band. They have glossy black-blue upperparts, a white collar, throat, sides of face, and belly. The bill is

SPECIES ACCOUNTS

White-necked puffbirds dig nests into former termite nests built in trees, or nest in holes in the ground. (Illustration by Dan Erickson. Reproduced by permission.)



black, there is variable dark barring on the flanks, the tail is narrow with white tips and the feet are black. As one of the largest puffbirds, adults are about 11 inches (25 centimeters) long and weigh between 2.9 and 3.7 ounces (81 and 106 grams).

Geographic range: They range from Mexico in Central America to Venezuela, Colombia, Ecuador, eastern Peru, northern Bolivia, and northern and western Brazil (to the Amazon River) in South America.

Habitat: White-necked puffbirds live in mostly humid to semi-arid (somewhat dry) secondary forests, mixed pine and oak woods, forest edges and clearings, and plantations; from sea level to 3,940 feet (1,200 meters).

Diet: Their diet consists of large insects and small vertebrates (animals with backbone), along with some vegetable materials. They hunt from the ground to the tops of the trees.

Behavior and reproduction: The mating pair defends their territory. They do not migrate. White-necked puffbirds spend much of their time perching without motion on high open branches. Female and male pairs dig nests in former termite nests built in trees usually 40 to 50 feet (12 to 15 meters) off the ground, but can range from 10 to 60 feet (3 to 18 meters). Holes in the ground are also used as nests. Information about incubation and nestling periods and activities are not known.

White-necked puffbirds and people: There is no known significant relationship between people and white-necked puffbirds.

Conservation status: White-necked puffbirds are not threatened. There are few in Central America, but they are fairly numerous in South America. ■



RUFOUS-CAPPED NUNLET

Nonnula ruficapilla

Physical characteristics: Rufous-capped nunlets have a small body, slender bill, deep chestnut crown (top of head), a gray face, nape (back of neck), and sides of the breast. They have plain dull-brown upperparts, rufous (reddish) underparts, a whitish belly, and dark brownish gray feet. Adults are 5.3 to 5.5 inches (13.5 to 14.0 centimeters) long and weigh between 0.5 and 0.8 ounces (14 and 22 grams).

Geographic range: They range (east and west) from eastern Peru to western Brazil south of the Amazon River, and (north and south) from northern Brazil to northern Bolivia.

Habitat: Rufous-capped nunlets live in the mid-levels and undergrowth of humid forest edges, secondary forests, streamside forests, and the banks of the black waters (igapó) of the Amazon River area. They prefer areas that surround rivers and contain bamboo trees.

Diet: It is believed that they eat mostly insects.

Behavior and reproduction: Rufous-capped nunlets are usually found alone or in pairs. They are generally found sitting quietly in low vegetation where they search for food. The birds give out a long series of sharp, clear, short whistles sounding like “fwick!-fwick!” that are softer and lower in sound near the beginning and end. Little information is available about reproduction. It is known that nests are often made in holes in earthen banks or trees.

Rufous-capped nunlets and people: There is no known significant relationship between people and rufous-capped nunlets.

Conservation status: Rufous-capped nunlets are not threatened. They seem to be fairly common in most of their habitat. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.



Rufous-capped nunlets are usually found alone or in pairs. They are generally found sitting quietly in low vegetation where they search for food. (Illustration by Dan Erickson. Reproduced by permission.)

Web sites:

Mangoverde World Bird Guide. "White-necked Puffbird *Notharchus macrorhynchos*." <http://www.mangoverde.com/birdsound/spec/spec100-1.html> (accessed on July 19, 2004).

family CHAPTER

BARBETS Capitonidae

Class: Aves

Order: Piciformes

Family: Capitonidae

Number of species: 92 species

PHYSICAL CHARACTERISTICS

Barbets are colorful, small- to medium-sized birds. They have a thick, stout bill that is cone-shaped and sharply tipped, bristles (in most species) around the mouth and bill, and tufts over the nostrils. They have a rather large head, a forked or brush-tipped tongue, short and rounded wings, a short tail, and a zygodactyl (zye-guh-DACK-tuhl) foot structure (two toes pointing forward and two toes backward). The bill is heavy and strong, being short but solid in smaller species and rather long and pointed in larger ones.

Males and females look alike in African and Asian species, but look different in color and patterns in South American species. Many African species are mostly black and white with patches of yellow, red, or both in various patterns. Asian barbets are mostly green with patterns of yellow, red, purple, brown, and blue in the chest, head-top, and cheek. South American barbets are often showy-looking birds with black, white, red, and yellow present. Others have orange breast shields or red breast bands. Adults are 3.2 to 13.8 inches (8 to 35 centimeters) long and weigh between 0.3 and 7.2 ounces (8.5 and 203 grams).

GEOGRAPHIC RANGE

Barbets are found in northern South America, southern Central America, sub-Saharan Africa, and south and Southeast Asia. They are found mainly within tropical Africa.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

HABITAT

Barbets inhabit lowland tropical forests and forest edges. Some species, especially the African ones, are found in secondary forests, parklands, and urban areas that contain fruiting trees. Other species live in drier thornbush habitats with large termite mounds. Barbets like dead wood for digging out nesting holes and to perch on all year-round.

DIET

Barbets are fruit eaters, but young barbets need high protein diets and therefore feed on insects. Where available, the fruit, nectar, and blossoms from avocado, banana, fig, mango, papaya, and pepper trees are eaten. Also, ants, beetles, larvae (LAR-vee), bird eggs, centipedes, lizards, locusts, snails, spiders, termites, worms, and young birds are eaten. They are often found foraging around thickets, ditches, and outbuildings.

BEHAVIOR AND REPRODUCTION

Their zygodactyl foot structure allows them to perch, grasp, and climb in near-vertical motions. The outer toe is moved forwards or sideways to provide a better hold. Barbets hop and climb quickly but awkwardly on trees, and move slowly through low bushes and on the ground. They often perch silently for long periods of time. Larger species are less active than smaller ones. Barbets fly well, but look a little awkward in the air, mostly flying only short distances. They do not support themselves with their tail, except when digging nests. They have a monotonous voice and make a fast series of notes resembling honks, chirps, or hammer-tapping. Mating pairs call out to each other in a pattern of notes, which may be also used by other group members. The larger species are social birds, with helpers to assist in raising young. Others are more territorial, with only the mating pair helping out in the caring of young. They roost in nest holes all year round.

Barbets are monogamous (muh-NAH-guh-mus; having one mate), with some species mating for life. Most of the birds have breeding territories which they defend by singing, often having ten to twelve different calls sung individually or between the mating pair and the helpers. Breeding birds also show color patches on the head, wings, rump, tail, and bill, with feathers erected to emphasize the effect. Male and female pairs often preen each other (groom feathers with the bill). The nest is

usually a hole in decayed or dead trees (in branches for smaller species), but can also be former termite mounds or burrows within sand or earthen banks. The hole enters a vertical shaft and ends in a widened chamber where females lay two to five white eggs. The incubation period (time to sit on eggs before hatching) varies, but is twelve to fourteen days in some species, while it is eighteen to nineteen days in other species. The nestling period (time needed to care for young) also varies with species: periods of twenty to twenty-one days, twenty-four to twenty-six days, and thirty-three to thirty-five days. The shorter periods are associated with the smaller species, while the longer periods generally accompany larger species.

BARBETS AND PEOPLE

There is no known significant relationship between people and barbets.

CONSERVATION STATUS

One species, the white-mantled barbet is listed as Endangered, facing a very high risk of extinction, dying out, and nine species are Near Threatened, not currently threatened, but could become so. Habitat loss from logging and other human activities continue to threaten populations of barbets.

SPECIES ACCOUNTS



COPPERSMITH BARBET *Megalaima haemacephala*

Physical characteristics: Coppersmith barbets are small, plump barbets with a short neck, large head, and short tail. They have dark green upperparts, a red forehead, yellow sides of the throat and head, one black stripe through the eyes and another one that runs below the eyes and onto the bill. They have pale greenish-white under parts with broad dark green streaks and a red patch across the upper breast, and reddish legs. Females are a duller red than the bright males. Juveniles lack all red colorings, with streaky patterns on the throat and a much paler bill. Adults are 5.9 to 6.7 inches (15 to 17 centimeters) long and weigh between 1.1 and 1.8 ounces (30 and 52 grams).

Geographic range: Coppersmith barbets are found from peninsular and northern India, north-eastern Pakistan, Bangladesh, Nepal, and Sri Lanka, to southwestern China, Malaysia, Sumatra, and the Philippines.

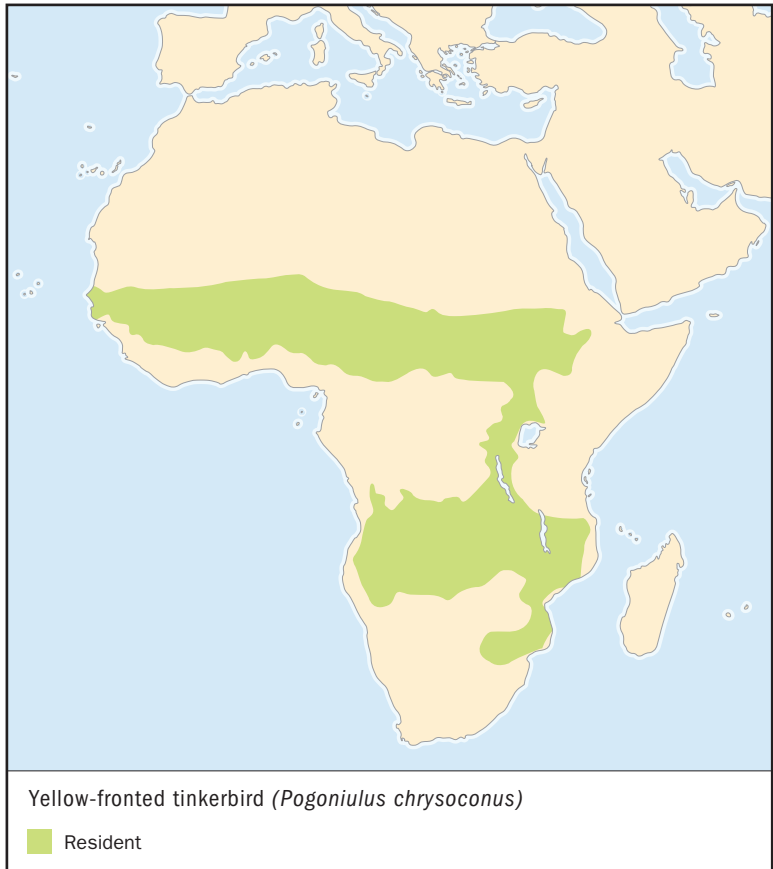
Habitat: Coppersmith barbets prefer dry deciduous woodlands, forest edges, teak forests, irrigated orchards and plantations with fruiting trees, urban areas that contain trees, and mangroves.

Diet: Their diet consists of figs, custard-apples, guavas, mangos, and papal fruits, along with smaller berries and many types of insects such as beetles, crickets, mantids (plural of mantis; large, predatory insects), and various insect larvae. They tap and chip away tree bark in order to find invertebrates (animals without a backbone).

Behavior and reproduction: Coppersmith barbets sing frequently with a long call. While singing, they bob their head, jerk their body, and flick their tail. Their call is a series of “tuk-tuk-tuk,” which sounds like a copper sheet being beaten (which gives the bird its name). Females lay two to four eggs in a hole dug from a tree. The incubation period is twelve to fourteen days, and the fledgling period (time for young to grow feathers necessary to fly) is about five weeks. Both parents feed the young, but once chicks learn to fly the parents leave them to brood again (young born and raised together).

Coppersmith barbets and people: People often enjoy hearing coppersmith barbets sing their “hammering” song.

Conservation status: Coppersmith barbets are not threatened. They are common in most of their range. ■



YELLOW-FRONTED TINKERBIRD

Pogoniulus chrysoconus

Physical characteristics: Yellow-fronted tinkerbirds are small, strong-billed, short-tailed tinkerbirds that have a yellow to orange forecrown and center of crown bordered in black. They have a black hindcrown with white streaks, black upperparts with white to yellow-white streaks, gray under parts washed with lemon yellow, a black tail with yellow-white edges, blackish brown wings edged in white or yellow-white, and a mostly pale yellow rump. Adults are 4.3 to 4.7 inches (11 to 12 centimeters) long and weigh between 1.9 and 2.2 ounces (8 and 20 grams).

Geographic range: They are found in the sub-Saharan Africa, from the Atlantic Ocean to southern Sudan (but not found near the coast of the Red Sea), south from Sudan to Lake Victoria, and most of Central Africa south to Mozambique. They are not found in central West Africa.

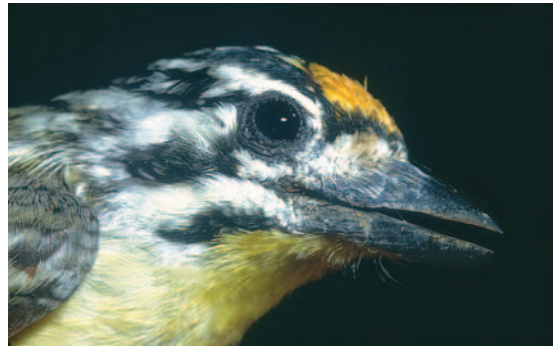
Habitat: The birds live in many types of forests and riverside woodlands. They like dry, bushy lands from small patches of forests to tall clumps and scattered trees in grasslands and scrublands.

Diet: Yellow-fronted tinkerbirds eat small berries and bright red, orange, and purple fruits, such as mistletoe berries and figs, as well as insects, beetles, and other invertebrates. They move quietly through foliage and dead leaves while pecking at prey or taking off berries and fruits.

Behavior and reproduction: Yellow-fronted tinkerbirds do not regularly migrate. They usually are found alone or in pairs, but will sometimes join flocks of many bird species. The birds fly fast from spot to spot. During breeding season, they dig cavities in many places such as dead stumps or branches. During this time, breeding birds become aggressive to other barbets that try to approach. In order to defend their territory, males erect their crown feathers, swing their head, flutter their wings, flick their tail, and call out with popping sounds. Females lay two to three white eggs. The incubation period is about twelve days, while the nestling period is about twenty-one days. They breed in all seasons, and have three to four broods each year.

Yellow-fronted tinkerbirds and people: People enjoy listening to the song of yellow-fronted tinkerbirds.

Conservation status: Yellow-fronted tinkerbirds are not threatened. They are generally common throughout their geographical range. ■



Yellow-fronted tinkerbirds eat small berries and fruits, as well as insects, beetles, and other invertebrates. (P. Ward/Bruce Coleman Inc. Reproduced by permission.)



TOUCAN BARBET

Semnornis ramphastinus

Physical characteristics: Toucan barbets are patterned and colorful birds with a short bill that is large at the base. Males have black around the bill base, a stiff black tuft on the nape (back of neck), and a broad white line behind the eyes. Females are similar to males, but do not have the stiff tuft on the nape. Juveniles are duller in color. Adults are about 7.5 to 9.8 inches (19 to 25 centimeters) long and weigh between 3.0 and 3.9 ounces (85 and 110 grams).



Geographic range: They are found in southwestern Colombia and western Ecuador in South America.

Habitat: Toucan barbets prefer wet subtropical forests and montane (mountainous) tropical forests, secondary growth, and forest edges and open pastures that contain scattered fruit trees.

Diet: Their diet is made up of mostly fruits (sixty-two species of plants have been recorded), but they also eat insects and other invertebrates when fruit is limited or not available.

Behavior and reproduction: Toucan-barbets are found around fruiting trees and bushes. They forage in groups of up to six birds, usually a territorial pair and their young. The birds hop on branches and climb through low bushy growth from about ground level to the forest canopy. They sometimes remain motionless on a perch. Their

The toucan barbet gets its name from its colorful bill—toucans are birds that have brightly colored bills. (Illustration by Joseph E. Trumpey. Reproduced by permission.)

song is a series of short, foghorn-like notes repeated many times, such as “hawk” followed by “ag.” During this song, the tail is often cocked. A territory is found around a roosting and nesting hole in a dead tree. The breeding pair will drive away all visitors, including older offspring and other group adults, except for one or two helpers. The number of eggs laid is unknown. The incubation period is about fifteen days. The male and helpers will help the female incubate the eggs. The young are fed for forty-three to forty-six days. If another brood is laid, the earlier offspring will help out.

Toucan barbets and people: People may trap toucan barbets.

Conservation status: Toucan barbets are Near Threatened. They are common in parts of their small range of about 7,700 square miles (20,000 square kilometers). Some birds suffer from trapping and loss of their habitat. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

“Coppersmith Barbet *Megalaima haemacephala*.” Delhibird: The Northern India Bird Network. <http://www.delhibird.org/species/sp03557.htm> (accessed on August 24, 2004).

family CHAPTER

TOUCANS Ramphastidae

Class: Aves

Order: Piciformes

Family: Ramphastidae

Number of species: 41 species

PHYSICAL CHARACTERISTICS

Toucans are the symbol of the American tropics and very easy to recognize. They are large, brightly colored birds with very large bills that are also brightly colored. You are not likely to confuse a toucan with any other bird.

A toucan's bill often curves downward at the tip. Though large, it is very lightweight. Serrations along the edge look like teeth. Toucans are distinctive in other ways. They have a long tongue with a brushy tip. The feet have two toes pointing forward and two pointing backward, like a woodpecker's. (Most birds have three toes pointing forward and one toe pointing back). The skin around the eye is bare, without feathers, and often brightly colored. The joint at the base of the tail is unusually flexible. Males and females look much alike, although the male usually is heavier and has a longer bill.

GEOGRAPHIC RANGE

Toucans are found from north-central Mexico south through Central America to northern Argentina in South America. Colombia has the largest number of toucan species, twenty-one in all. Venezuela, Ecuador, and Brazil each are home to seventeen toucan species. Rivers often form barriers separating different species because toucans don't like to make long flights over water.

HABITAT

Most toucans live in tropical rainforest, usually at low elevations. They require mature forest with full-grown trees, big

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

enough and old enough to develop cavities, holes, that toucans can use as nest sites. They also need forests with plenty of fruit trees.

DIET

Back in the eighteenth century, the first European naturalists to see toucan specimens (animals collected for study) concluded these birds must catch fish with their massive, serrated bills. In fact, forest fruits make up 95 percent of the toucan diet. Common foods include guavas, figs, red pepper fruits, and palm fruits. To eat, a toucan holds a fruit in the tip of its beak, then tosses its head backward so the fruit falls down its throat. After digesting the pulp, the toucan regurgitates (re-GER-jih-tates; throws up) the hard pits and seeds. In this way, forest seeds are spread to new places.

Along with fruit, toucans also catch and eat small animals including songbirds, crickets, cicadas (suh-KAY-duhz), spiders, termites, lizards, toads, frogs, and snakes. They raid eggs and nestlings from other birds' nests. Some species catch bats as they sleep in daytime roosts. Some follow columns of army ants to eat the insects stirred up by the ant swarms.

BEHAVIOR AND REPRODUCTION

Most toucans live year round in the same area. A few species make annual migrations between mountainside forests, where they spend spring and summer, and lowlands, where they spend fall and winter. Their main predators, animals that hunt them for food, are forest eagles, hawks, and owls. Monkeys, snakes, and weasels raid toucan nests. Small songbirds will mob or chase after the toucans that raid their nests.

Toucans prefer to stay high in the treetops. They don't like to descend to the forest floor. They drink rainwater from tree-top plants called bromeliads and bathe by fluttering against wet leaves. They also like to take sunbaths. Most species avoid flying over open water. They are weak flyers and can tire, fall into the water, and drown.

Toucans often live in small flocks of about a dozen birds or fewer. It's common to see a group gather high in a tree to vocalize together, in the early morning, evening, or after a rainstorm. The calls sound like harsh grunts and croaks. Group members also interact by preening each other. To cross an open

space, birds go one at a time. Many toucans roost in tree cavities. A sleeping toucan turns its head so its bill rests on its back, then bends its tail forward over the back so that it looks like a ball of feathers.

Members of larger species do not breed until they are three or four years old. Males often court females by feeding them berries. Often, the pair also preens one another. Most toucans nest in tree holes. They may remove chunks of very rotten wood but do not really dig a hole like woodpeckers do. Large toucans often use natural holes. Small toucans use abandoned woodpecker holes. One pair may use the same hole year after year. Both parents incubate the white eggs for about sixteen days. They also share the work of brooding the nestlings and bringing insects. The young birds fledge, grow their flying feathers, after about fifty days, but the parents keep feeding them for another eight to ten days.

TOUCANS AND PEOPLE

Brazilian rulers once wore ceremonial robes of toucan feathers. Amazonian Indians still use toucan feathers and bills as decorations. Toucans are also hunted for food and taken from nests to be raised as pets. In some areas they are considered pests on orchard crops. In Great Britain, a toucan was the mascot for a popular beer, and in the United States a blue toucan is the mascot for a well-known breakfast cereal.

CONSERVATION STATUS

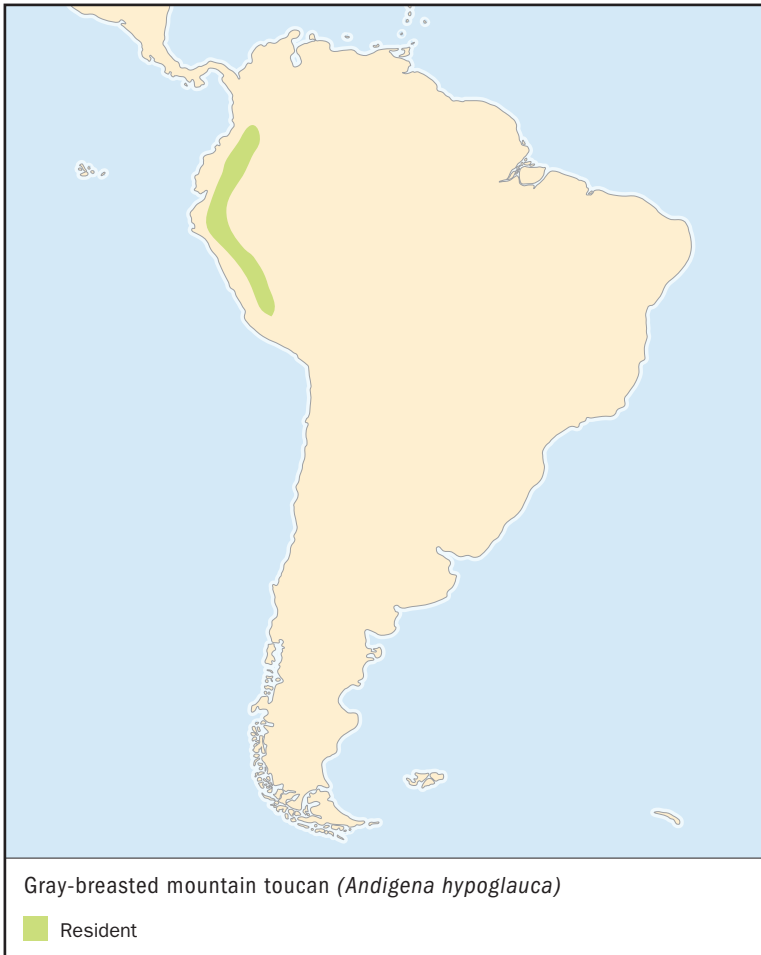
One species, the yellow-browed toucanet of Peru, is listed as Endangered, facing a very high risk of extinction, by the World Conservation Union (IUCN). Three other species are considered Near Threatened, in danger of becoming threatened with extinction: the saffron toucanet of central South America, the plate-billed toucan, and the gray-breasted mountain-toucan. Habitat loss to logging and agriculture is a problem because most species need undisturbed forest. Selective logging sounds environmentally responsible but removes large trees that would



TOUCAN TALK

Hollywood movies often use toucan sounds in the background. These weird-sounding calls create a jungle atmosphere. The calls are very loud and will carry through the dense forest. And they are very strange. Channel-billed toucans croak. Emerald toucanets grunt. White-throated toucans yip like dogs. Other species rattle and squawk and even purr. Often, a pair of birds will perch high in a tree to call for an hour or more, twice a day, at dawn or dusk. Their duet is a classic rainforest sound.

support strangler figs, an important source of fruit. New roads being built through the forest could isolate populations, because toucans don't like to cross wide open spaces.



GRAY-BREASTED MOUNTAIN TOUCAN

Andigena hypoglauca

Physical characteristics: This is one of four species of mountain toucan. All are a mix of blue, gray, and brown overall and have red feathers under the tail. This species can be identified by its colorful bill: red and black at the tip and yellow-green at the base, where there is a black, thumbprint-shaped mark. The black head is set off from the chestnut-brown back by a pale gray collar. Individuals may be 18 to 19 inches (46 to 48 centimeters) long and weigh 8.6 to 13.1 ounces (244 to 370 grams).

SPECIES ACCOUNTS

Gray-breasted mountain toucans feed alone or in small groups of up to six individuals. They move quietly, not like most toucans, and may feed with other species of birds. (Illustration by Joseph E. Trumpey. Reproduced by permission.)



Geographic range: These birds live in the west slope of the north-central Andes from central Colombia through Ecuador to south-east Peru.

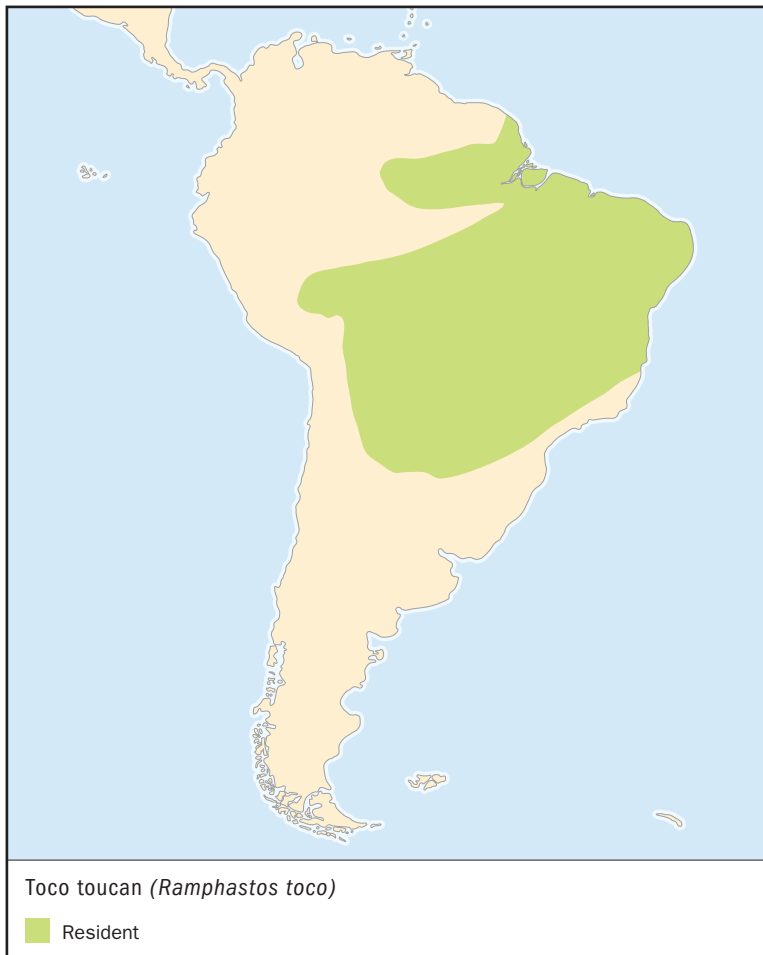
Habitat: This species lives at higher elevations than other toucans, in humid mountaintop forests. Birds spend much of their time in the tallest trees.

Diet: Fruits and berries. This species is more willing than most to leave the high canopy, leaves of the tallest trees, to feed on raspberries in the understory, area beneath the tallest trees.

Behavior and reproduction: The behavior has not been well studied. Birds feed alone or in small groups of up to six individuals. They move quietly, not like most toucans. They have been seen feeding with other bird species including tanagers, thrushes, and blackbirds. Little is known about their breeding habits.

Gray-breasted mountain toucans and people: This species lives in remote areas and is of little significance to humans.

Conservation status: Considered Near Threatened by the IUCN. In some areas its high-altitude forest habitat is being cleared for farms, mining, grazing, or wood-cutting for fuel. ■



TOCO TOUCAN

Ramphastos toco

Physical characteristics: This is the largest of the toucans and very easy to identify. Toco toucans are black overall except for a white throat. The truly enormous bill is orange with a black oval spot at the tip. The skin around the eyes is also orange. Individuals average 21.5 to 23.8 inches (55 to 61 centimeters) long and may weigh 17.7 to 30.4 ounces (500 to 860 grams).

Geographic range: These toucans live from the mouth of the Amazon River in Brazil southward to Paraguay, northern Bolivia, and northern Argentina.

Habitat: Toco toucans can live both in undisturbed forest and in secondary forests as well as plantations and palm groves.

Diet: Like all toucans, toco toucans eat a variety of fruits, but mostly figs. They also eat caterpillars, termites, and eggs and nestlings of other birds.

Behavior and reproduction: Toco toucans are more likely than other species to drop down to the forest floor to feed on fallen fruit. They are more willing to fly across open water and through open areas. The voice is a deep grunt. Individuals may feed alone or in small flocks. They are very agile and often hang head-down like oversized chickadees to get at hard-to-reach fruits.

Pairs preen each other and fence with their bills like swordfighters. They often nest in palm-tree cavities and can dig the hole a little deeper. They also nest in burrows, which they dig in soft, sandy riverbanks, or nest in tree-termite nests that have been opened by woodpeckers. A typical clutch is two to four white eggs. The male and female take turns incubating for eighteen days. The nestlings are fed insects at first. They fledge after forty-three to fifty-two days.

Toco toucans and people: This species is often depicted in art. It is the classic symbol of the rainforest. Toco toucans are still hunted for food and young birds are taken as pets.

Conservation status: This species is not considered to be threatened. It is adapted to living in secondary forests and plantations, and there is some evidence that toco toucans are moving into newly cleared areas in Amazonia. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, and Jordi Sargatal, eds. *Handbook of the Birds of the World. Vol. 7, Jacamars to Woodpeckers*. Barcelona: Lynx Edicions, 2002.

Fjeldså, Jon, and Niels Krabbe. *Birds of the High Andes*. Copenhagen: University of Copenhagen Zoological Museum, 1990.

Short, Lester L., and Jennifer F. M. Horne. *Toucans, Barbets and Honeyguides*. Oxford, U.K.: Oxford University Press, 2001.

Skutch, A. F. *Trogons, Laughing Falcons, and Other Neotropical Birds*. College Station, TX: Texas A & M University Press, 1999.

Stotz, Douglas F., John Fitzpatrick, Theodore A. Parker II, and Debra K. Moskovits. *Neotropical Birds: Ecology and Conservation*. Chicago: University of Chicago Press, 1996.

HONEYGUIDES

Indicatoridae

Class: Aves

Order: Piciformes

Family: Indicatoridae

Number of species: 17 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

PHYSICAL CHARACTERISTICS

Honeyguides are fairly small tropical birds that are related to woodpeckers and barbets. Their most visible features are the dark stripe on the cheeks (on some species) and the white on the outer tail feathers (on all species). They have drab-colored plumage (feathers) of olive-greens, grays, browns, black, and white, with some signs of yellow, depending on the species. Males and females look alike with respect to their plumage, except for three species. Two species have yellow wing patches, and one species has orange on the head and rump. Honeyguides have a short and sturdy bill (with most species having a raised rim on the nostrils to prevent liquid foods from entering), a long tail with very short feathers, which is marked with white bars and tipped in a dark color, and strong legs with strong zygodactyl (zye-guh-DACK-tuhl) toes (two toes [second and third] pointing forward and two toes [first and fourth] facing backward). They have long and hooked claws and long, narrow, and pointed wings. They also have very good senses of sight, sound, and smell. Adults are 4 to 8 inches (10 to 20 centimeters) long and weigh between 0.4 and 1.9 ounces (10 and 55 grams).

GEOGRAPHIC RANGE

Honeyguides are found in the temperate (mild) and tropical parts of Africa south of the Sahara. In addition, two species are found along the southern foothills of the Himalayas and in Southeast Asia.

HABITAT

Honeyguides live in dense primary forests, secondary forests, gallery forests in semiarid country, open woodlands and scrublands that include a mix of broadleaved trees, shrubs, and grassland. Generally, darker-colored species tend to live in broadleaved forests, while paler ones live in drier woodlands. They live from sea level to near the top of trees in mountainous areas.

DIET

Their diet is mostly made up of beeswax, but the birds also eat insects, ants, spiders, bee larvae (LAR-vee; active immature insects), waxworms, termites, flies, and caterpillars. They sometimes eat fruits and other plant matter. All honeyguides eat live prey, animals they hunt for food, by catching it while in the air. The bill is adapted to feeding on wax and probing for insects in tree bark. They feed on beeswax by flying up to a bee nest, gripping the tree's surface alongside the outer comb, and biting off and swallowing pieces of wax. The body of honeyguides is strong enough to be protected from most bee stings, but they can be killed if enough bees attack. A few species lead animals or humans to honey sources by flying close to them and calling "churr-churr-churr-churr" or "tirr-tirr-tirr-tirr" in order to get them to open up the food source.

BEHAVIOR AND REPRODUCTION

The behavior of honeyguides makes them one of the most interesting birds to watch, especially the way they eat beeswax and actually lead other animals to wax sources. They are also aggressive birds in that they harass other birds and mob around wax sources. They are solitary birds most of the time, although when foraging for food, dozens of honeyguides may show up at a wax source. Many species will fly around human settlements (such as campgrounds) hoping to find food.

All honeyguides sing, except for one species. Their singing consists of a wide variety of sounds that are sung for particular situations. While singing, the birds also arch their necks, fluff out rump feathers (and other feathers), and quiver the tail. The rustling sound of waving wings is often heard with aggression or mating sounds. White tail bars are often displayed while the birds fly. They have strong wings that allow them to do complicated maneuvers in the air. For courtship, males sing and make aerial displays directed toward females.

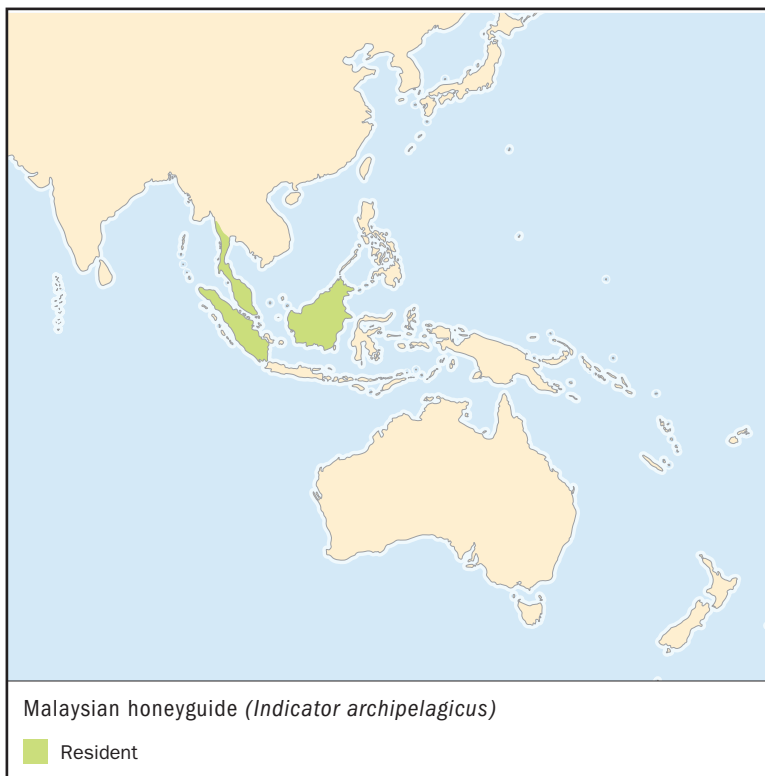
All honeyguides are brood parasites, meaning that females lay fertile eggs among the eggs of other bird species in order for the nesting birds to incubate their eggs. Honeyguides do not build nests and are unable to raise their own young. Most female honeyguides lay about six eggs, but will leave only one or two eggs per nest. The female honeyguide invades a nest while the parents are gone, deposits a white thick-shelled egg (blue in one species), sometimes punctures or removes a host's egg, and leaves within seconds. All host nests are in cavities, such as in trees, in the ground, in termite mounds, or in ant nests. The most frequently used host birds are barbets, tinkerbirds, kingfishers, bee-eaters, hoopoes, and woodpeckers. When honeyguides are born, they break host eggs that have not hatched or kill host hatchlings with their hooked bills and claws. Their breeding season is tied to the breeding season of their host species. The incubation period (time to sit on eggs before hatching) is twelve to thirteen days and the nestling period (time to take care of young unable to leave nest) is thirty-eight to forty days.

HONEYGUIDES AND PEOPLE

Some species of honeyguides guide humans to honey sources.

CONSERVATION STATUS

No species are currently listed as Threatened by the World Conservation Union (IUCN). Three species, the Malaysian honeyguide, yellow-rumped honeyguide, and dwarf honeyguide, are listed as Near Threatened, in danger of becoming threatened. Most species in Africa and Asia are threatened by deforestation.



MALAYSIAN HONEYGUIDE

Indicator archipelagicus

SPECIES ACCOUNTS

Physical characteristics: Malaysian honeyguides have brownish gray plumage with small, bright yellow shoulder patches, dark olive-brown upperparts, a light gray breast, and red eyes. They have a brown pointed bill, white under parts, and black legs and feet. Females do not have the yellow shoulder patch. Adults are about 2.5 inches (16 centimeters) long and weigh between 0.8 and 1.4 ounces (23.0 and 38.5 grams).

Geographic range: These honeyguides live in the Malaysian Peninsula, Sumatra, and Borneo.

Habitat: Malaysian honeyguides inhabit tropical rainforests and broadleaved, lowland evergreen forests from sea level to 3,280 feet (1,000 meters) in elevation. They also are found in open country, secondary forests, and in hill-slope forests.

Malaysian honeyguides eat beeswax, bee larvae, bees, and other insects. (Illustration by Wendy Baker. Reproduced by permission.)

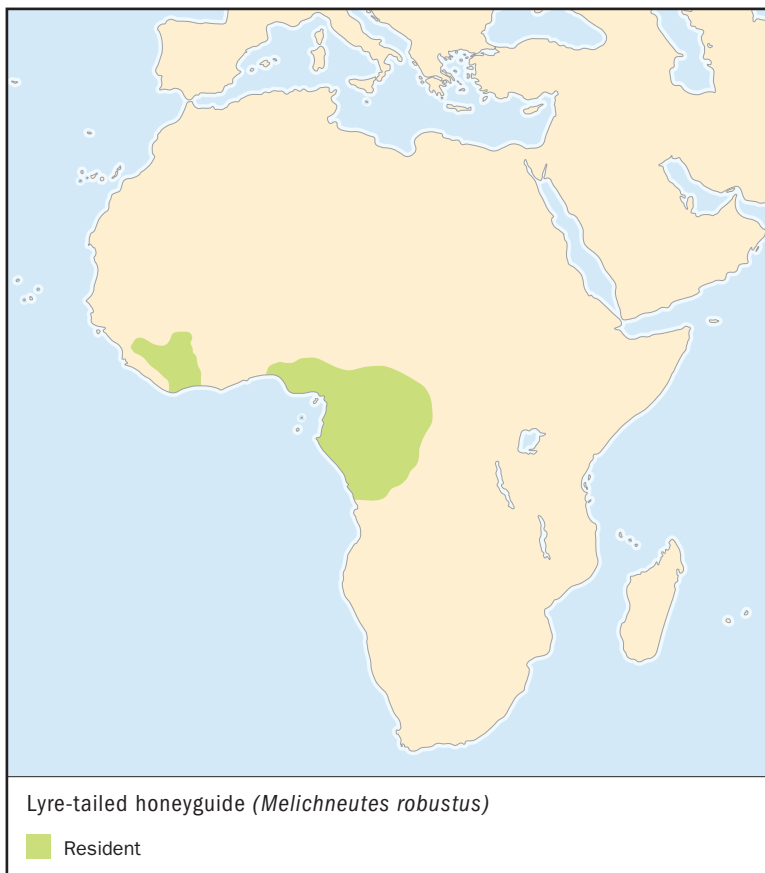


Diet: They eat beeswax, bee larvae, bees, and other insects.

Behavior and reproduction: Malaysian honeyguides call out with harsh, cat-like “miaow,” followed by a churring “miaow-krruuu” or “miao-miao-krruuu,” which rises in pitch. Males that are mating with females will sing. Little else is known about their reproduction behavior except that they are thought to be brood parasites like other honeyguides. Breeding seasons are believed to occur from February to May in Malaya, during August in Thailand, May into June in Sumatra, and from January into March in Borneo.

Malaysian honeyguides and people: There is no known significant relationship between people and Malaysian honeyguides.

Conservation status: Malaysian honeyguides are listed as Near Threatened due to deforestation. ■



LYRE-TAILED HONEYGUIDE

Melichneutes robustus

Physical characteristics: Dull-colored lyre-tailed honeyguides have a long, lyre-shaped tail (U-shaped), and two middle pairs of retrices (RET-rihs-uhs) paired flight feathers of the tail, which extend from the tail edges) that are curved outward at distal ends (away from the point of attachment), while the outermost retrices are narrow and short. The birds also have a white undersurface about the tail (which is shown while in flight), olive-green upperparts, and whitish underparts. Males and females look different with respect to their plumage (unlike most honeyguides whose sexes look alike). Females show some gray streaks on the rear underbelly, and their tail is not as large



The lyre-tailed honeyguide is named after the lyre, a stringed instrument that is played by plucking the strings. Its tail looks similar to the U-shaped instrument. (Illustration by Wendy Baker. Reproduced by permission.)

as the male, but has the same shape. Adults are about 6 inches (17 centimeters) long and weigh between 1.7 and 2.2 ounces (47.0 and 61.5 grams).

Geographic range: They are found in two primary locations in western Africa: one location that includes Liberia, Sierra Leone, and the Ivory Coast, and the other location that includes a larger area around Cameroon.

Habitat: Lyre-tailed honeyguides are located in lowland tropical rainforests, primary forests and their edges, secondary forests, and plantations.

Diet: They eat beeswax, bee larvae, termites, insects, spiders, and fig fruits.

Behavior and reproduction: Lyre-tailed honeyguides are not believed to migrate. The mating display of lyre-tailed honeyguides is very interesting. Males fly around while singing several “pee-pee” notes, which go into “ve-bek, ve-vek.” They then go into a rapid and steep dive with their tail

feathers spread out. These feathers brush against the wind to make a “kwa-ba kwa-ba” series of sounds. Males may also fly up and down in spiral movements.

Lyre-tailed honeyguides and people: There is no known significant relationship between people and lyre-tailed honeyguides.

Conservation status: Lyre-tailed honeyguides are not currently threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L.A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

Creagrus at Monterey Bay. "Honeyguides: Indicatoridae." <http://www.montereybay.com/creagrus/honeyguides.html> (accessed on July 13, 2004).

WOODPECKERS, WRYNECKS, AND PICULETS

Picidae

Class: Aves

Order: Piciformes

Family: Picidae

Number of species: 213 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Woodpeckers, wrynecks, and piculets, together called picids (PISS-ids), are small- to medium-sized birds that are primarily arboreal (live in trees). They have patterns of brown, green, or black-and-white. Most picids have zygodactyl (zye-guh-DACK-tuhl) toes (two toes facing forward and two backward). Woodpeckers and piculets usually have just two feather colors, with males having red or yellow on the head and females lacking it or with less of it; while wrynecks have similar looking sexes.

Woodpeckers have stiff rectrices (RET-rihs-uhs; paired tail feathers). Wrynecks and piculets do not have rectrices. Woodpeckers have a relatively large head that is often called a “shock-absorber” due to its hammering into wood, a straight, sharply pointed to chisel-tipped bill, long cylindrical tongue that is often tipped like a brush, short legs, and strongly curved claws. The major tail feathers are mostly black.

Wrynecks have brown, gray, and black upperparts, a slender, pointed bill, rounded wings, lightly colored under parts, a relatively long tail with rounded tail feathers, and short legs. Piculets look like small woodpeckers except that tail feathers are pointed but not stiff. Piculet plumage is soft and mostly brown and black in color patterns.

Woodpeckers are 4.7 to 24.0 inches (12 to 60 centimeters) or more long and weigh between 0.6 and 21.0 ounces (17 and 600 grams). Wrynecks are 6.3 to 7.5 inches (16 to 19 centimeters) long and weigh between 0.78 and 2.10 ounces (2 and 59 grams). Piculets are 3.0 to 6.3 inches (7.5 to 16.0 centimeters)

long and weigh between 0.24 and 1.20 ounces (6.8 and 33.0 grams).

GEOGRAPHIC RANGE

Picids are found around the world except Australia, New Zealand, New Guinea, Madagascar, Ireland, many oceanic islands, and polar regions. Wrynecks are found only in Eurasia and Africa. Piculets are located only in Asia, South and Central America, and Hispaniola.

HABITAT

Picids are found in any environment that contains woody vegetation, preferring forests, woodlands, and savannas (flat grasslands). Some species are located in grasslands and deserts. Picids need high relative humidity, frequent precipitation, and the presence of standing or running water to make moist wood so that it will decay in order to help the birds more easily dig into the wood.

DIET

Their diet is mostly insects and other arthropods (invertebrate animals with jointed limbs). It also includes fruits, nuts, and tree sap. A chisel-like bill of many species helps to find wood-boring beetle larvae (LAR-vee; active immature insects), ants, and termites, along with sap stored inside trees. Its long worm-shaped tongue has a barbed tip that, together with sticky saliva, is used to catch prey.

BEHAVIOR AND REPRODUCTION

Picids fly with both wavy and straight movements, with larger species preferring straighter motions. Since wings are short, picids are able to maneuver (mah-NOO-ver) easily throughout forests. Most picids do not migrate, but some species do make seasonal migratory trips.

Vocalizations are single notes often used to communicate between breeding mates. “Winny” and “rattle” calls are often heard, but with many differences heard from different species. Picids also communicate by making mechanical sounds by tapping on wood.

Picids are monogamous (muh-NAH-guh-mus; have a single mate), and nest in cavities, holes. Most dig their own cavities, sometimes with the assistance of helpers. All females lay shiny white eggs. Clutch size (eggs hatched together) varies within and among species, but averages three to five eggs. The incubation

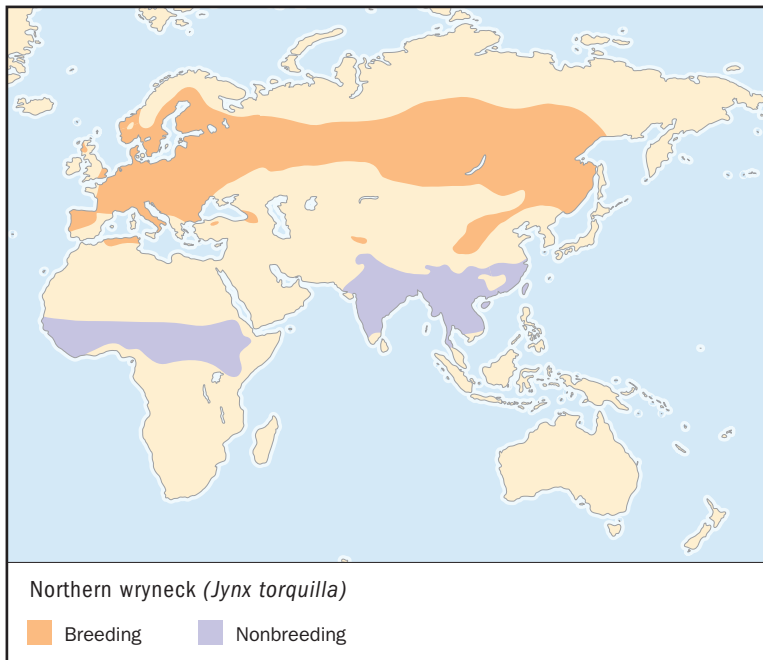
period (time needed to sit on and warm eggs in order for them to hatch) is ten to twelve days, and is shared by both parents. Young stay helpless, naked, and blind from birth to about four to seven days. The nestling period (time to take care of young unable to leave nest) lasts from three to six weeks.

WOODPECKERS, WRYNECKS, AND PICULETS AND PEOPLE

The bright red feathers of many male woodpeckers are important to the culture of natives. Various species have been hunted for their scalps, bills, tongues, and skins. Several species have been eaten by local cultures. Woodpeckers help to control pest insect populations. However, woodpeckers are also blamed for damage to buildings and agricultural crops.

CONSERVATION STATUS

Nineteen woodpeckers and five piculet species were included on the 2003 World Conservation Union (IUCN) Red List of Threatened Species. Three species are listed as Critically Endangered, facing an extremely high risk of extinction; one species as Endangered, facing a very high risk of extinction; seven species as Vulnerable, facing a high risk of extinction; and thirteen species as Near Threatened, in danger of facing a risk of extinction. Habitat destruction and modification are the largest threats to picids.



NORTHERN WRYNECK

Jynx torquilla

SPECIES ACCOUNTS

Physical characteristics: Northern wrynecks have a gray appearance without the stiff tail feathers of most picids. Their upperparts are gray mottled with brown and buff, with a diamond-shaped dark patch on the back extending to the nape (back of neck). The breast is light gray. Experts report that they have the longest tongue of any bird in proportion to its body. Sexes look alike, and juveniles look similar to adults. Adults are 6 to 7 inches (15 to 18 centimeters) long and weigh between 0.8 and 1.9 ounces (22 and 54 grams). Their wingspan is 11 to 12 inches (28 to 30 centimeters) long.

Geographic range: Some species breed from northern Eurasia south through temperate Eurasia to Japan. Other species breed in western Asia and northwestern Africa. Nonbreeding populations are found wintering in the warmer climates of central Eurasia south to drier areas of central and West Africa, India, Southeast Asia, southern China, and southern Japan.



Northern wrynecks build nests in old woodpecker holes, nest boxes, and other natural and artificial cavities, sometimes enlarging them. (Hans Reinhard/Bruce Coleman Inc. Reproduced by permission.)

Habitat: They live in open deciduous or mixed forests, clearings, wooded pastures, and edge habitats with scattered ground cover.

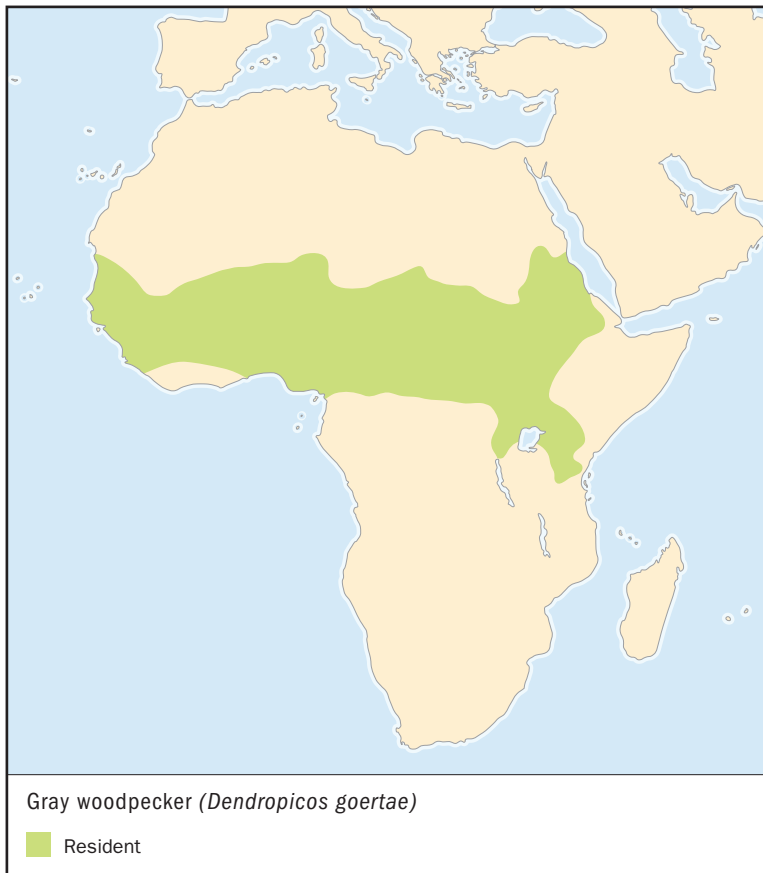
Diet: They eat arthropods, ants, and insect larvae and pupae (PYOO-pee; developing insect inside cocoon). They forage by hopping on the ground and capturing prey with its sticky tongue.

Behavior and reproduction: Northern wrynecks have a call similar to “kew-kew-kdw-kew.” They travel at night about their home range, alone during the nonbreeding season, as pairs during breeding season, or as post-breeding family groups. The birds build nests in old woodpecker holes, nest boxes, and other natural and artificial cavities, sometimes enlarging them. Nests are 3 to 49 feet

(1 to 15 meters) off the ground, while the nest bottom is sometimes lined with grass or moss. The clutch size is seven to twelve eggs. The incubation period is twelve to fourteen days and the fledgling period (time for young to grow flight feathers) is eighteen to twenty-two days. Both parents take care of young for ten to fourteen days after birds are able to fly. A second nest may follow after the first.

Northern wrynecks and people: No known significant relationship exists between northern wrynecks and people.

Conservation status: Northern wrynecks are not threatened. Their numbers are declining in Europe as their habitat is converted by humans and as conifer forests replace native trees. ■



GRAY WOODPECKER

Dendropicos goertae

Physical characteristics: Gray woodpeckers are small woodpeckers with a long, straight, rather wide bill, unbarred green or brownish green upperparts, a red rump, a brownish black tail, and gray under parts with an orange-to-yellow belly patch and some barring on the flanks. Males have a pale, striped, gray head with red on the back of the head and neck, while females lack the red on the head. Adults are about 8 inches (20 centimeters) long and weigh between 1.4 and 1.9 ounces (40.5 and 52.5 grams).



Gray woodpeckers eat insects, ants, termites, beetle larvae, and other arthropods. They search for their food on the ground, in the air, and on live and dead trees. (Illustration by Gillian Harris. Reproduced by permission.)

Geographic range: They range throughout the forests and savanna habitats in central and west Africa; from sea level to 9,800 feet (3,000 meters).

Habitat: Gray woodpeckers inhabit wooded and savanna areas, thickets with large trees, riverine (near rivers) forests, gardens, and mangroves.

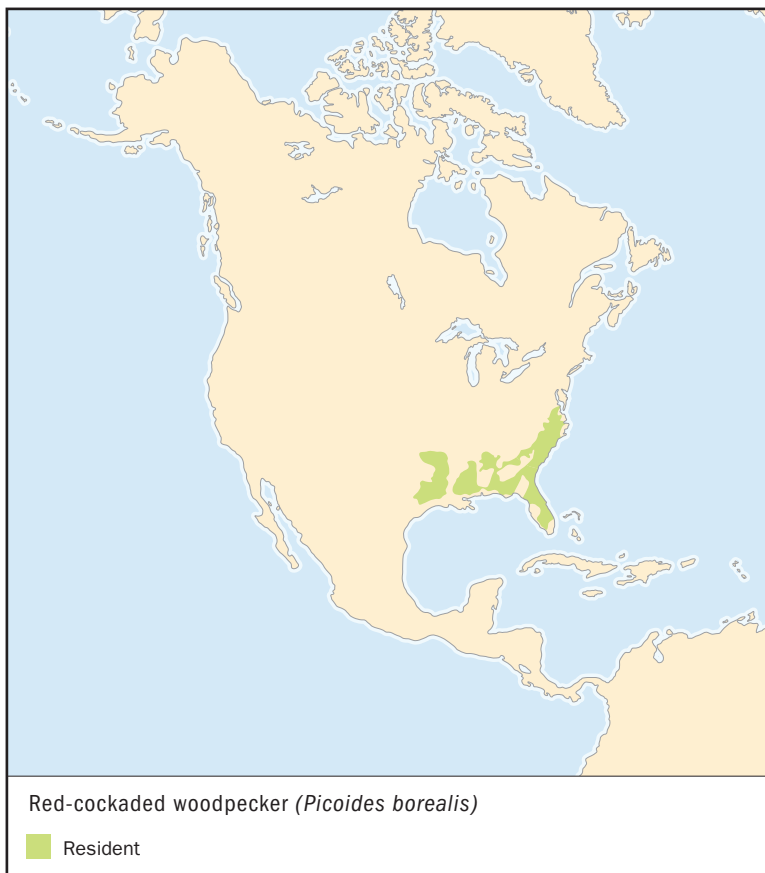
Diet: Their diet consists of insects, ants, termites, beetle larvae, and other arthropods. They forage on the ground, in live and dead trees, and in the air.

Behavior and reproduction: Gray woodpeckers are found in pairs and family groups. They move quickly through its habitat, and often remain near forest edges. Their call is a loud and fast “peet-peet-peet-peet.” The nesting period is from December to June in west Africa; December to February and July to September in the Democratic Republic of the Congo; and February to July and September to November in eastern Africa. The breeding pair digs out the nest cavity from a tree, usually 1 to 60 feet (0.3 to 18.3 meters) off the ground. Clutch size is two

to four eggs. There is no known information about incubation, parental care, or fledging.

Gray woodpeckers and people: There is no known significant relationship between gray woodpeckers and people.

Conservation status: Gray woodpeckers are not threatened. They are fairly common to common in the areas where they live. ■



RED-COCKADED WOODPECKER

Picoides borealis

Physical characteristics: Red-cockaded woodpeckers are medium, black-and-white woodpeckers with large white cheek patches and back plumage that has alternating, horizontal stripes of black and white. They have a black forehead and the back of the neck is also black with a small red streak on each side of the forehead (called a cockade, thus its name), a black stripe behind eyes, whitish under parts, and a black tail with black-spotted white outer feathers. They have black wings and wing coverts (small feather around quill base) with white spots. Males have several tiny red feathers between white cheek patches and a black crown (top of head), while females do not have red coloring. Young males have a patchy-looking red section on

Red-cockaded woodpeckers live in family groups of a mated pair, current young, and unmated adult helpers. (John Snyder/ Bruce Coleman Inc. Reproduced by permission.)



the forehead, while young females have white flecks on the lower forehead. Adults are 7.1 to 8.7 inches (18 to 22 centimeters) long and weigh between 1.4 and 1.9 ounces (40 and 55 grams). Their wingspan is about 16 inches (40.6 centimeters) long.

Geographic range: They are scattered in eastern Texas, southeastern Oklahoma, southern Missouri, south central Kentucky, central

Tennessee, to southeastern Maryland, south to southern Florida and across the Gulf coast.

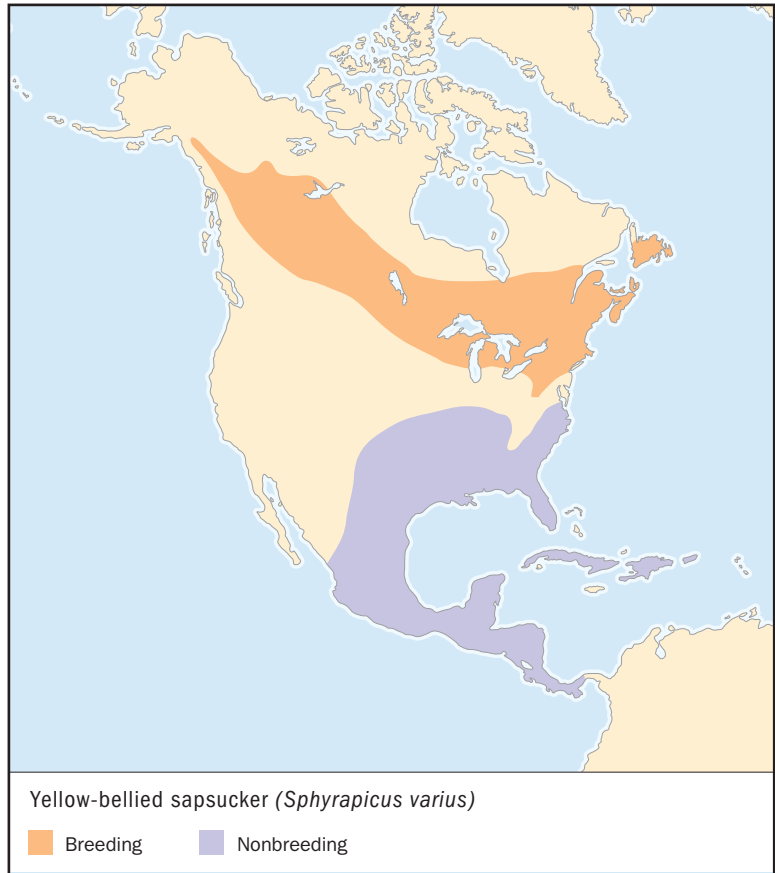
Habitat: They are widely found in open, mature pine forests and forests of pine mixed with oak, especially long-leaf pines and loblolly pines.

Diet: Red-cockaded woodpeckers eat ants, beetles, caterpillars, roaches, wood-boring insects, and spiders found on tree surfaces, especially pine trees, and by scaling back loose bark. They eat earworms off of corn in the summer, along with berries and nuts. Males forage on limbs and trunk of pines above the lowest branches. Females forage on trunk below the lowest branch.

Behavior and reproduction: Red-cockaded woodpeckers are noisy birds, with calls of “yank-yank,” “sripp,” and “tsick.” They are monogamous, with a family clan of the mated pair, current young, and unmated adult helpers. They nest in the roost cavity of the breeding male, which sometimes takes the male one year to finish (but may be used for years). Only living pine trees are used for the roost/nest. They spend a lot of time maintaining the flow of tree sap, which is used to stop predator snakes. Females lay two to five eggs. The incubation period is ten to fifteen days, and the fledgling period is twenty-two to twenty-nine days. Both parents and helpers care for young, with only one brood each year.

Red-cockaded woodpeckers and people: Because of red-cockaded woodpeckers’ dependence on pine forests, they are in conflict with the logging industry. Bird watchers enjoy watching these birds.

Conservation status: Red-cockaded woodpeckers are listed as Vulnerable. They are also listed as Endangered under the U.S. Endangered Species Act. They have declined in numbers because of deforestation. Conservation measures have been enacted to help the birds recover. ■



YELLOW-BELLIED SAPSUCKER

Sphyrapicus varius

Physical characteristics: Yellow-bellied sapsuckers are small black-and-white woodpeckers with a short, chisel-tipped bill and a white stripe that goes down the wing. Adult males have a red throat, forehead, and forecrown, a black bib (area under bill), a bold black-and-white patterned face, a white shoulder patch, and black-and-white barring on the back. There is a pale yellow wash on the under parts, the yellow breast changes to whitish on the lower belly, and is streaked about the flanks, leading to a white rump. Females have a white throat and a paler red forehead and crown. Juveniles have more brown and buff than adults, and less white and red on crown. Adults are 7.5 to 8.7 inches (19 to 22 centimeters) long and weigh between

1.4 and 22 ounces (40 and 62 grams). Their wingspan is 16 to 18 inches (40.6 to 45.7 centimeters) long.

Geographic range: They breed in northern North America east of the Rocky Mountains across Canada from northeastern British Columbia to southern Labrador and Newfoundland, south to North Dakota and Connecticut. They have separated populations in the Appalachian Mountains of eastern Tennessee and northern Georgia. They winter in the eastern United States through eastern and southern Mexico and Central America, Bahamas, and West Indies.

Habitat: Yellow-bellied sapsuckers are found in deciduous and mixed forests, especially around aspen, birch, and hickory trees.

Diet: Their diet consists of beetles and their larvae, insects, ants, other arthropods, tree sap, fruits, tree buds, and berries. Young are fed a mixture of sap and insects by both sexes.

Behavior and reproduction: Yellow-bellied sapsuckers generally are found alone. They are usually found near a group of trees (often near water) where they obtain sap for food. Both sexes migrate, but males migrate shorter distances than females and return earlier to the breeding territory. They are often silent birds, but do make low, growling “mew” cat-like sounds. When alarmed, they give out calls of “cheee-er, cheee-er.” Mates perform loud drumming duets during breeding season along with cries of “hoih-hoih.” Most nests are built in living trees that are infected with a fungus that rots the tree’s center. The entrance is made very small, just allowing them to enter. Clutch size is four to five eggs, with more eggs produced as the birds go north. The incubation period is twelve to thirteen days and the fledgling period is twenty-five to twenty-nine days; both parents incubate and fledge. There is one brood each year.

Yellow-bellied sapsuckers and people: People consider yellow-bellied sapsuckers pests when they damages trees in search of sap.

Conservation status: Yellow-bellied sapsuckers are not threatened. ■



Yellow-bellied sapsucker mates perform loud drumming duets during breeding season along with cries of “hoih-hoih.” They build nests with small entrances, just large enough for them to enter. (Illustration by Gillian Harris. Reproduced by permission.)



IVORY-BILLED WOODPECKER

Campephilus principalis

Physical characteristics: Ivory-billed woodpeckers are a very large woodpeckers that are mostly black with white streaks going down the neck on each side to the upper wing bases, a robust, chisel-tipped, ivory-white bill, a black forehead, a white patch on the folded wing, and white secondary feathers and inner primary feathers. Males have a pointed crest (growth on top of head) that is black in front and scarlet behind. Females have a longer, more pointed, somewhat re-curved solid black crest. Adults are 18.5 to 21.0 inches (47 to 54 centimeters) long and weigh between 15.5 and 18.3 ounces (440 and 570 grams). Their wingspan is 30 to 32 inches (76.2 to 81.3 centimeters) long.

Geographic range: The birds are found in the southeastern United States from eastern Texas to North Carolina and south throughout Florida, and in Cuba.

Habitat: Ivory-billed woodpeckers inhabit old-growth forests, especially bottomlands, swamp forests and cypress swamps, pine uplands, and areas with dead trees.

Diet: They eat arthropods, especially larvae of large wood-boring beetles, and fruits.

Behavior and reproduction: Ivory-billed woodpeckers have a territory of about 6 square miles (15.5 square kilometers). They are often seen in family groups. Their call is a sad-sounding single-or double-note tooting; one such sound is a clarinet-like “yank-yank-yank.” The birds are monogamous. They breed from January through April in North America and March through June in Cuba. They build nest cavities in large dead trees or in live trees with fungus. Nests are usually built 24 to 50 feet (7.3 to 15.2 meters) off the ground with a cavity often 2 feet (6 meters) in depth. Females lay two to four eggs. The incubation and fledgling periods are not known, but both parents incubate and take care of young.

Ivory-billed woodpeckers and people: Ivory-billed woodpeckers have been important to the cultures of Native Americans (especially their head and bill), as good-luck charms, and in the trade of skins and eggs for early European settlers in North America. The birds have been captured for food. They helped to limit the number of pest insects on farmlands and in forests.

Conservation status: Ivory-billed woodpeckers are listed as Critically Endangered, and may already be extinct. Their rarity is due mostly to loss old-growth forests and the killing of the birds over many centuries. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.



Ivory-billed woodpeckers may be extinct, but researchers remain hopeful that the bird still survives. (Illustration by Gillian Harris. Reproduced by permission.)

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

Web sites:

About.com. "Endangered Red-cockeyed Woodpecker: Only 1 Percent of its Habitat Left." <http://birding.about.com/library/weekly/aa012301a.htm> (accessed on July 19, 2004).

Nutty Birdwatcher. "The Ivory-billed Woodpecker." <http://www.birdnature.com/mar1898/ivorybilledwood.html> (accessed on July 19, 2004).

order

CHAPTER

PERCHING BIRDS

Passeriformes

Class: Aves

Order: Passeriformes

Number of families: 74 families

PHYSICAL CHARACTERISTICS

The order of Passeriformes, commonly called passerines (PASS-ur-eenz), are the largest and most unique family of birds. A few of the many birds in the passerine order are crows, finches, flycatchers, nightingales, swallows, tanagers, vireos, shrikes, wrens, and warblers. They are sometimes called “perching birds” and (less accurately) “song birds.” These perching birds include some of the most colorful and mysterious of all birds in the world, such as birds of paradise from New Guinea and the bright orange cock-of-the-rock from tropical South America. They are generally small to medium in size (except for the crows, jays, and lyrebirds) with large wings relative to their body size. Two interesting physical features of the passerines are their distinctive syrinx (SIHR-ingks; or vocal organ) that allows them through complicated muscles to have a wide range of songs and calls, and their very specialized feet and legs that allow them to grip and move in very unique ways.

Passerines have three toes that point forward and one toe that points backward. The first toe, called the hallux (HAL-lux), is often called the hind toe because it always points backward and is never reversible. This arrangement allows them to perch on many different slender structures such as tree branches, grasses, telephone and fence wires, feeders, or anything that has some type of narrow place to perch. Their vocal organ allows the birds to produce a large range of vocalizations (although some species can only grunt and hiss while others produce very complex and melodic sounds that are called songs).

phylum

class

subclass

● **order**

monotypic order

suborder

family

Bills on passerines vary greatly in size and shape due to the type of diet of each species. The types of bills range from tiny, needle-like bills of insect-eating warblers and vireos, to the generally huge, vise-like bills of finches, designed to crack the hard shells of seeds.

Passerines weigh between about 0.18 ounces (5 grams) in kinglets (also very small in weight are the bushtits and pygmy tits) to about 3.1 pounds (1.4 kilograms) in ravens and about 3.7 pounds (1.7 kilograms) in Australian lyrebirds and ravens.

GEOGRAPHIC RANGE

Passerines are very widespread on all continents except Antarctica, but have the greatest numbers in the tropical areas of the world. They are considered the most widely distributed of all birds, living on nearly every oceanic island that can support a bird. Passerines include over half in total numbers of the known birds in the world.

HABITAT

Passerines are found in grasslands, woodlands, scrublands, forests, deserts, mountains, and urban environments. They are widely scattered throughout arid (dry) to wet, and temperate (mild) to tropical climates, especially liking areas filled with trees because most of the birds are arboreal; that is, they live primarily in trees. Although passerines are found in most areas of the world, they avoid areas with permanently frozen land, or permafrost, that are always covered with snow and ice.

DIET

Passerines eat mostly seeds, fruits, nectar, insects, small birds, small lizards, and marine invertebrates (animals without a backbone). They have been known to also eat carrion (decaying animals), and even potato chips and other foods left out by humans. They eat often throughout the day and need a high-energy diet in order to supply their active lifestyle. Crossbills, diggers, and swallows have shapes for their bill, wing, and legs that are especially adapted for foraging. They forage (search for food) by many different methods including taking insects from the bark of trees, catching insects as they fly through the air, and very specialized methods for eating seeds. Most of the birds eat food as they find it, but some do store their food to eat later. Shrikes (sometimes called “butcherbirds”) use an unusual way

to store foods they catch. They spear insects, small birds, and lizards on thorns or barbed wire, so they can come back later to feed.

BEHAVIOR AND REPRODUCTION

Because of their leg, foot, and toe arrangement, passerines are able to sleep while perched when special features in the foot automatically grip a perch. Being songbirds, passerines are very vocal birds with highly developed vocal chords. In fact, the birds are some of the most complex and rich singers in the bird world. They sometimes copy the songs and calls of other birds, especially the songs of competing males within their own species. Some species even copy the sounds of insects, frogs, and (even) mechanical sounds heard in their environment. Many passerines migrate from their nesting grounds to warmer regions, or from southern temperate regions north to the tropics. Predators (animals that hunt other animals for food) of passerines include raccoons, feral (wild) cats, and snakes.

There are many different ways that passerines build nests and many different materials that are used to construct nests. Generally, nests are made out of sticks or grass on the ground, in trees, and even sometimes in the banks of fast-flowing rivers. Nests are often camouflaged (KAM-uh-flajd; designed to hide by matching the colors and textures of the surrounding environment) in order to conceal them from predators. Although nests range from being built very simply to very elaborately, they can be classified as being constructed in three different ways: built out of a hole, built so the opening is from above, and built with a dome or roof.

Parental care by both sexes is common in passerines, although females sometimes are left with all of the duties. Cooperative breeding, in which young birds delay breeding and assist other individuals (often their parents) in raising young and defending the territory, is common in several passerine groups. Female passerines lay small eggs that are usually colored or marked in some manner. Clutch size (group of eggs hatched together) varies greatly from one to sixteen eggs. Passerines are born blind, naked, and completely helpless. The



PASSERINES VERSUS NON-PASSERINES

About 60 percent of all bird species are passerines, and the families within this order have a larger than average number of species. These two facts portray the degree of success with which passerine birds evolved and grew in numbers over the many, many years of their existence. Because there are so many passerines, the class Aves (birds) is often informally divided into passerines and non-passerines.

incubation period (the time that it takes to sit on eggs before they hatch) is around fourteen days but can last up to twenty-eight days in large species and fifty days in lyrebirds. Some females are able to replace eggs that have been lost or destroyed. The fledgling period (the time necessary for young birds to grow feathers necessary to fly) is eight to forty-five days.

PASSERINES AND PEOPLE

Passerines help to control insects that destroy trees. In fact, the American redstart feeds on regal moths and the red-eyed vireo eats gypsy moths, both of which are very harmful to oak trees, a common tree found in urban areas.

CONSERVATION STATUS

Passerines are by far the most successful group of birds on Earth with respect to numbers and distribution around the world. More than five hundred passerine species, out of 5,100 to 6,000 species worldwide, are considered threatened with extinction, mostly due to habitat loss. (The exact number of passerine species is unknown due to disagreements among bird experts about whether some birds are species or not. About 8,600 total bird species are believed to exist throughout the world.) Bird experts, or ornithologists (people who scientifically study birds), believe that some of the species of passerines will become extinct in the future unless corrective measures are taken to preserve their habitat and reverse other negative conditions brought about mostly by human activities.

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

BROADBILLS Eurylaimidae

Class: Aves

Order: Passeriformes

Family: Eurylaimidae

Number of species: 15 species

PHYSICAL CHARACTERISTICS

Broadbills are small- to medium-sized, stockily built birds with large eyes; a broad bill (from which they get the name) that is rounded along its sides, flattened from front to back, hooked at the end, and with a wide gap; rounded wings; a rather short, square tail (except for one species with a fine-pointed tail); short legs; strong, syndactylous (sin-DACK-tuh-lus; with fused digits) feet; and long, hooked claws. There is much difference among the species in the color of their plumage (feathers). Most birds are very colorful although some are rather dull looking, with colors ranging from browns with gray or black (in most African species) to green, red, blue, black, or silvery gray with many areas of bright colors (in most Asian species). Some species have an area of bare skin around the eyes that is sometimes pink or blue. Males and females look alike in some species but look different in others. Adults are 4.5 to 10.8 inches (11.5 to 27.5 centimeters) long and weigh between 0.4 and 6 ounces (10 and 171 grams).

GEOGRAPHIC RANGE

Broadbills are found in sub-Saharan Africa, Himalayan portions of India, Thailand, Cambodia, Vietnam, far southern China (also Hainan Island), Borneo, Sumatra, Java, peninsular Malaysia, and the Philippines.

HABITAT

Broadbills inhabit mostly humid tropical and subtropical lowlands (including evergreen or mostly evergreen broad-leaved

phylum
class
subclass
order
monotypic order
suborder

▲ family

lowland forests), while a few species are located in montane (mountain) forests and one species is found in dry climates. They move with the change of seasons to mountain areas when food becomes scarce.

DIET

Most broadbills eat insects, but some of the larger species also eat small vertebrates (animals with a backbone) such as lizards, frogs, small crabs, and small fish, and fruits such as figs. Foods are foraged from leaves or branches, caught while in flight, or captured on the ground.

BEHAVIOR AND REPRODUCTION

The behavior and reproduction habits of broadbills are not known very well. The birds are generally arboreal (live in trees) and are believed to be mostly monogamous (muh-NAH-guh-mus; having one mate), but some species may be polygamous (puh-LIH-guh-mus; having more than one mate). Broadbills join single or mixed species flocks, but avian experts do not know whether the birds remain in one territory, range over several territories, or return to a territory after leaving. When defending a territory or during courtship, broadbills perform various displays of songs and flights. Simple songs usually consist of dove-like cooing, croaks, trills, whistles, and a series of bubbly to screaming notes.

Broadbills have a mating and reproduction period that is tied to rainfall amounts. Some species reproduce during the dry season, while others mate during the rainy season. All of the birds make large domed nests in the shape of a pear that is suspended from the tips of branches. In almost all species, both males and females build nests. Such nests are made from twigs, rootlets, and leaf strips from plants such as grasses, bamboo, and palms. Oftentimes, spider webs, moss, cocoons, and other materials hide the nests. At other times, nests are hung above water to make it difficult for predators, animals that hunt them for food, to enter. Females lay two to six white to pinkish eggs that are sometimes unmarked or speckled reddish or purple. Males help females with the care of the young, and some species also use helpers, related, nonbreeding birds that help care for the young.

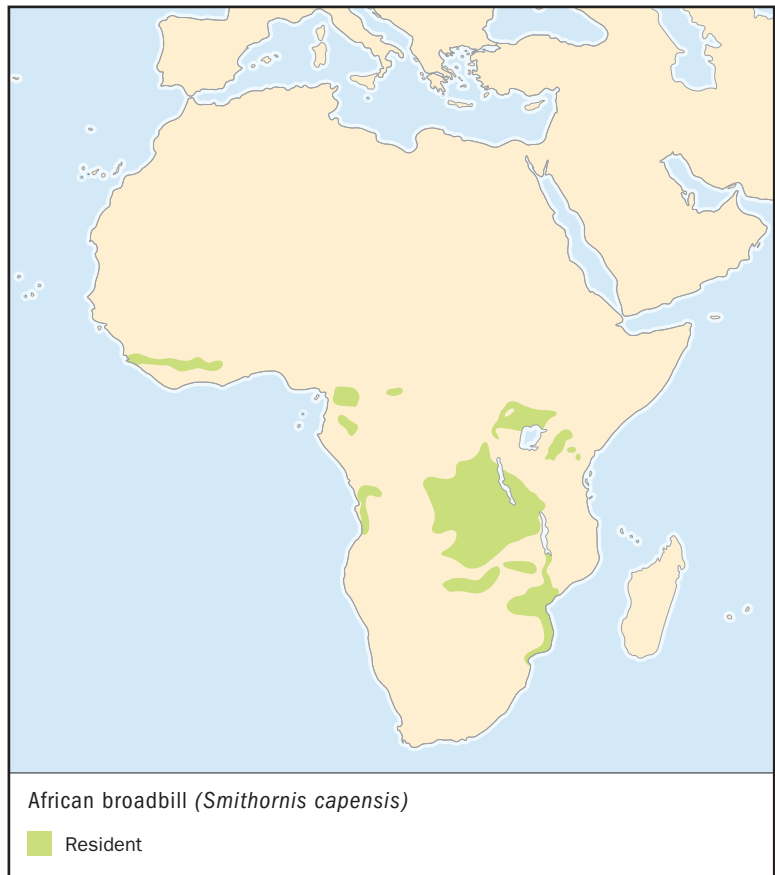
BROADBILLS AND PEOPLE

People hunt broadbills for their colorful plumage in order to sell them within the pet industry.

CONSERVATION STATUS

Three broadbill species are listed on the IUCN Red List as Vulnerable, facing a high risk of extinction, due to deforestation, mining, and human warfare in their very small ranges. Three other species are listed as Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



AFRICAN BROADBILL *Smithornis capensis*

Physical characteristics: African broadbills are stocky, short-tailed birds with a distinctive broad, flat bill. They have a brownish head and upperparts, and buffy underparts that are streaked with blackish colors. Males have a black crown (top of head), gray lower nape (back of neck), black upper mandible (top part of the bill) and whitish lower mandible (bottom part), and reddish brown upperparts and tail. The mantle (back, inner-wing, and shoulder area) has broad black streaks. White underparts are deeply streaked with black except on the central belly and rump, and the legs are olive to yellowish green. Females look like males but are duller overall, with a gray crown that has black streaks. Juveniles look like females but with less buff on forehead and a brown crown

with faint streaks. Adults are 4.7 to 5.5 inches (12 to 14 centimeters) long and weigh between 0.7 and 1.1 ounces (20 and 31 grams).

Geographic range: African broadbills are found in various scattered spots in central and southern Africa including Cameroon, Gabon, Central Africa Republic, Sierra Leone, Liberia, Ivory Coast, Ghana, Malawi, Democratic Republic of the Congo, Tanzania, Kenya, Zambia, Mozambique, Rwanda, Uganda, Angola, Namibia, and South Africa.

Habitat: African broadbills inhabit the under-story (lower vegetation of a forest) of primary and secondary forests, dense deciduous thickets, montane forests, riparian forests (along or near banks of rivers), a variety of woodlands and savannas (flat grasslands), and open agricultural lands. They are usually found at elevations below 2,300 feet (700 meters), but can be found as high as 8,000 (2,440 meters).

Diet: Their diet consists of insects such as caterpillars, butterfly eggs, and ants. They often rush forward to snag prey, sometimes even falling to the ground in order to capture food.

Behavior and reproduction: African broadbills are territorial birds. Both males and females perform elliptical display flights. During courtship, both birds face each other on a horizontal branch and flick their wings, changing between perching and hanging positions. Their call is a “twee-uu,” probably to keep in contact with other birds and to show alarm or distress. A whistled “huiii” and a mewing-like call are used during courtship. They build a bag-like nest of plant fibers, dead leaves, moss, and twigs with a rough-looking hanging tail. An entrance is made high on the side. The inside of the nest is lined with soft bark, dry stems, leaves, and grasses, and kept together with spider silk. Their breeding season varies depending on where they are located. Females lay one to three eggs.

African broadbills and people: There is no known significance to humans.

Conservation status: African broadbills are not threatened. They are common in many areas, but scarce in others, mostly due to habitat destruction. ■



During courtship, male and female African broadbills face each other on a horizontal branch and flick their wings, changing between perching and hanging positions. They also use a whistled “huiii” and a mewing-like call during courtship. (Illustration by Bruce Worden. Reproduced by permission.)



BLACK-AND-RED BROADBILL *Cymbirhynchus macrorhynchos*

Physical characteristics: Black-and-red broadbills are beautiful crimson and black birds. They have a black head, back, and tail feathers; crimson red underparts, rump, and throat; black wings with a white narrow stripe; and a bill that is pale blue on top and yellow below. Adults are 8.3 to 9.4 inches (21 to 24 centimeters) long and weigh between 1.8 and 2.7 ounces (50.0 and 76.5 grams).

Geographic range: They are found in Borneo, Myanmar, southern Thailand, southern Laos, south Vietnam, peninsular Malaysia, and Sumatra.

Habitat: Black-and-red broadbills occupy areas with water within evergreen forests.

Diet: Their food consists of mostly insects, but also mollusks, crabs, and small fish.

Behavior and reproduction: The behavior and reproduction habits of black-and-red broadbills are not well known. They are usually found in pairs or small groups. Nests are often built in dead stumps or along bends in streams. The breeding season usually occurs in the dry season. Females lay two to three eggs. Males may help females incubate (sit on) the eggs.

Black-and-red broadbills and people: There is no known significance between people and black-and-red broadbills.

Conservation status: Black-and-red broadbills are not threatened. They are fairly common throughout their range, but their habitat is being reduced, mostly due to human activities. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

FALSE SUNBIRDS AND ASITIES

Philepittidae

Class: Aves

Order: Passeriformes

Family: Philepittidae

Number of species: 4 species

PHYSICAL CHARACTERISTICS

Asities are very small, compact birds with tails so short that individuals look almost spherical, ball-shaped. The velvet and Schlegel's asities grow up to 6 inches (15 centimeters) long and weigh up to 1.5 ounces (40 grams). The common and yellow-bellied sunbird-asities (also called false sunbirds) are smaller, up to 4 inches (10 centimeters) long and up to 0.88 ounces (25 grams) in weight. Both of these species have long, thin, down-curved beaks, like those of nectar-feeding birds. The two asity species have more modest, short, slightly downcurved beaks.

Males sprout brilliant, colorful plumage (feathers) and caruncles (KAR-un-kulz; wart-like skin bumps) at the beginning of the mating season (October through February). After the breeding season, the males revert to duller coloration. Females do not change colors and their colorations are more drab, being various mixtures and patterns of olives, grays, dull greens and dull yellows. The coloration of males outside the breeding season resembles that of the females of the same species, and the caruncles fade and disappear.

GEOGRAPHIC RANGE

These species live in Madagascar, along the east coast and in the sambirano region, another rainforested area in the northwest.

HABITAT

Asities inhabit lowland (sea level), mid-altitude and high altitude tropical primary (original) and secondary (regrown)

phylum

class

subclass

order

monotypic order

suborder

▲ family

rainforest, and higher altitude scrub forest (forest with low trees and shrubs). All four species are common and in some areas, plentiful, but since they spend much time in the upper reaches of forests, and because of their small size, asities are difficult to spot and observe.

The velvet asity inhabits most of the east coast of Madagascar, in tropical primary and secondary rain forest from sea level to 5,700 feet (1,900 meters) above sea level. Schlegel's asity lives in tropical deciduous forest in northwestern and western Madagascar. The common sunbird asity lives in the mountainous tropical rainforest belt along most of the east coast, between 1,200 and 4,350 feet (400 to 1,450 meters) above sea level. The yellow-bellied sunbird asity lives in mossy mountain scrub forest that fringes the east coast forest belt between 3,630 and 5,970 feet (1,210 and 1,990 meters) of altitude.

DIET

Asities eat nectar, fruits, insects, spiders, and other small creatures.

BEHAVIOR AND REPRODUCTION

Asities are energetic, lively birds that seem to have little fear of anything around them, including humankind. Some will approach within a few feet of a human being, show a few quick threat displays, then fly off.

Philepittidae singing is simple and not especially loud. Male birds, in flight, can also make fairly loud whirring sounds with their wings. The tenth primary feather of each wing is pointed, and the extended shape creates the sound during flight. A male asity, by adjusting the position of the tenth primary feather, can turn the whirring sound on and off as he wants to. Males use the noise in courtship and defense displays.

Mating behavior in asities is centered on a social behavior system called a polygynous (puh-LIH-juh-nus) lek. One to five males display on vertical branches in an open area twenty to thirty meters across. The males go through several ritualistic displays, competing with others in the lek for the attention and approval of the females. In the most distinctive display, a male will bob up and down on its legs, feet still gripping the branch, while quickly opening and closing the wings. Females gather to watch the displays, each female choosing a male mating partner based on how attracted she is by his courting displays.

In the velvet asity, only females build nests and breeding partners do not form pair-bonds. The other species do establish pair-bonds, and males and females share nest building. A female or breeding pair builds a distinctive, spindle-shaped nest, made from moss, spider webs and plant fibers, suspended from a lower tree branch. The nest, which takes ten or more days to build, is about 10 inches (25 centimeters) in height and 5 inches (12 centimeters) wide. The female lays up to three eggs.

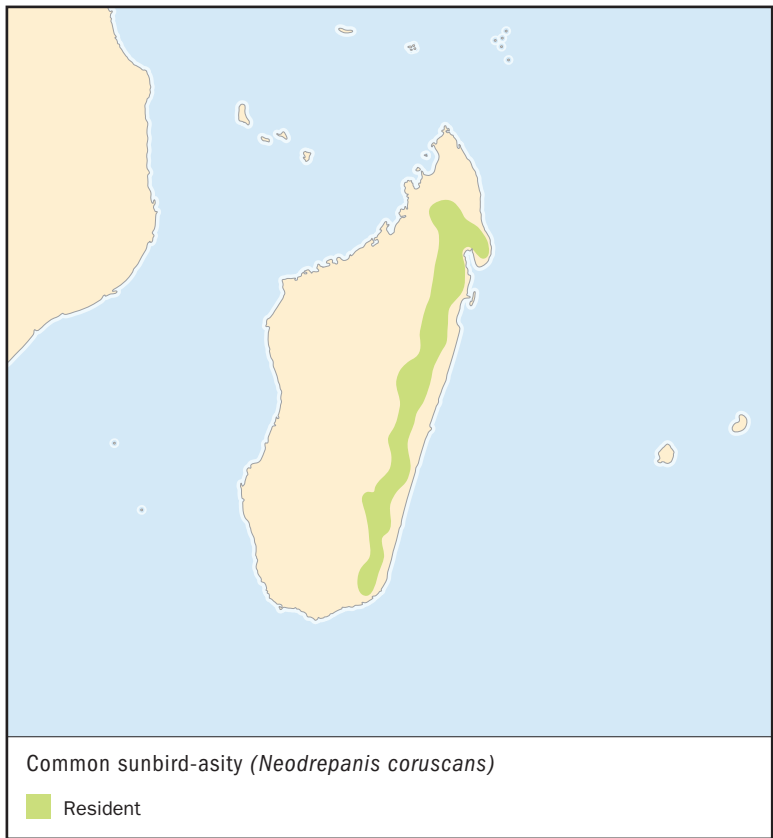
FALSE SUNBIRDS, ASITIES, AND PEOPLE

Asities are not considered pests in any way, since they stay in rainforest and have no interest in human cultivated crops. The tiny, brilliant birds have become a ecotourist draw, especially for dedicated birdwatchers eager to check out Madagascar's unique avian species.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists the yellow-bellied sunbird-esity as Endangered, facing a very high risk of extinction, and Schlegel's asity as Near Threatened, in danger of becoming threatened with extinction. The Endangered designation for the yellow-bellied sunbird-esity may be based on old data in which the species was believed to inhabit only a few mountain forest areas. According to a recent article by Prum and Razafindratsita, more recent surveys have found the yellow-bellied sunbird-esity to be widely distributed and plentiful throughout mountain forests along most of the east coast of Madagascar, and all four species of asity to be plentiful in their ranges and in no danger of extinction. The common sunbird-esity has been found in densities of a thousand individuals per 0.4 square miles (1 square kilometer). Yellow-bellied asities have been recorded in densities of over 2,600 individuals per 0.4 square miles (1 square kilometer).

SPECIES ACCOUNT



COMMON SUNBIRD-ASITY *Neodrepanis coruscans*

Physical characteristics: Adult body length is about 4 inches (10 centimeters) and adult weight is 0.88 ounces (25 grams). The breeding-season male's coloration is black fringed with royal blue on the crown, nape and shoulders, with yellow fringing of some of the wing feathers, deep yellow on the ventral surface (undersides) with olive-brown streaks on the breast. The caruncles are squarish and turquoise blue except for green closest to the eye. Females have dull yellowish underparts, yellow on the sides and on the underside of the tail, dull blue-green brown upper bodies and heads.

Geographic range: They are found along the east coast of Madagascar.



The male common sunbird-asity's breeding colors are black, blue, and yellow. During the nonbreeding season, his colors are duller blue-green, brown, and dull yellow. (Illustration by Dan Erickson. Reproduced by permission.)

Habitat: Sunbird-asities live in the east coast mid-altitude mountain rainforest from 1,200 to 4,350 feet (400 to 1,450 meters) above sea level.

Diet: Common sunbird-asities eat nectar from many plant sources; and insects and related creatures. Common sunbird asities glean (pluck off) insect prey from flowers, leaves, and bark.

Behavior and reproduction: The typical call of the common sunbird-asity is a high-pitched string of notes that sounds like “see-see-see-see-see-see.” The call can be heard from 150 to 300 feet (50 to 100 meters) away. Male common sunbird-asities, curiosity-driven, will often approach to within a few feet of a human being.

Common sunbird asities and people: There is little if any direct interaction between common sunbird asities and humanity, except for mostly foreign bird watchers, who benefit ecotourism in Madagascar and contribute to the local and national economies.

Conservation status: These birds are plentiful and widespread along Madagascar's east coast, with densities of a thousand individuals per 0.4 square miles (1 square kilometer) reported. They are not considered endangered or threatened. ■

FOR MORE INFORMATION

Books:

Goodman, Steven M., and Jonathan P. Benstead, eds. *The Natural History of Madagascar*. Chicago: University of Chicago Press, 2003.

Lambert, Frank, and Martin Woodcock. *Pittas, Broadbills, and Asities*. Sussex, U.K.: Pica Press, 1996.

Morris, P., and F. Hawkins. *Birds of Madagascar: A Photographic Guide*. New Haven, CT: Yale University Press, 1998.

Safford, R. J. and J. W. Duckworth, eds. *A Wildlife Survey of Marojejy Reserve, Madagascar*. Study Report No. 40. Cambridge, U.K.: International Council for Bird Preservation, 1990.

Periodicals:

Andrianarimisa, A. "A Record of the Sunbird Asity *Neodrepanis coruscans* in the R serve Sp ciale d'Ambohitantely." *Newsletter of the Working Group on Birds in the Madagascar Region* 5, no. 2 (1995): 8–9.

Goodman, S. M., and M. S. Putnam. "The Birds of the Eastern Slope of the Reserve Naturelle Int grale d'Andringitra." *Feldiana: Zoology, new series* no. 85 (1996).

Hawkins, F., R. Safford, W. Duckworth, and M. Evans. "Field Identification and Status of the Sunbird Asities *Neodrepanis* of Madagascar." *Bulletin of the African Bird Club* 4 (1997): 36–41.

Prum, R. O. "Phylogeny, Biogeography, and Evolution of the Broadbills (Eurylaimidae) and Asities (Philepittidae) Based on Morphology." *Auk* 110 (1993): 304–324.

Prum, R. O., and V. R. Razafindratsita. "Lek Behavior and Natural History of the Velvet Asity *Philepitta castenea*." *Wilson Bulletin* 109, no. 3 (1997): 371–392.

family CHAPTER

PITTAS

Pittidae

Class: Aves

Order: Passeriformes

Family: Pittidae

Number of species: 30 species

PHYSICAL CHARACTERISTICS

Pittas are medium-sized birds with a large head, short neck, strong bill often hooked at the tip, round body, short rounded wings, short tail, longish legs, and strong, large feet. They are some of the world's most brightly colored birds and are sometimes called the "jewels of the forest" and "jewel thrushes" (because of similarity to thrushes). Many species contain patches of white, chestnut, turquoise, green, red, purple, and black, which are found on the chin, breast, or body areas that are hidden by dull-colored wing feathers. Both sexes contain these same colors, however females are generally duller. Adults are 5.9 to 11 inches (15 to 28 centimeters) long and weigh between 1.6 and 7.1 ounces (45 and 202 grams).

GEOGRAPHIC RANGE

Pittas are found from Africa to the Solomon Islands and from Japan through Southeast Asia to New Guinea and Australia. They are mostly found in peninsular Malaysia, Borneo, Sumatra, and Java. One species is found in India, two species are found from west-central to east-central Africa, and two species live along the northern and eastern coasts of Australia.

HABITAT

Most pittas inhabit the understory (level of tropical forests nearest ground level) of lowland tropical and subtropical forests. They prefer areas that are moist, such as those near rivers and streams or in shaded ravines. Some pittas inhabit

phylum

class

subclass

order

monotypic order

suborder

▲ family

moist, montane (mountain) forests from sea level to elevations of 8,200 feet (2,500 meters).

DIET

Food consists of insects, small frogs, snails, snakes, mice, earthworms, and other small vertebrates (animals with a backbone) and invertebrates (animals without a backbone).

BEHAVIOR AND REPRODUCTION

Pittas are terrestrial birds, staying generally on or near the ground. They prefer to walk or run, rather than fly, when alarmed or disturbed, and tend to be shy, usually found alone or in pairs. They do not generally migrate, move seasonally, but some species migrate at night over land and water. The birds defend a territory that varies depending on the species from 0.8 to 2.5 acres (0.3 to 1.0 hectares), but can be as large as 50 acres (20 hectares). Their defense calls are one, two, or sometimes three syllables that sound like a whistle or buzz. A loud pleasant double whistle is heard in the early morning or evening. When unwanted visitors enter their territory, pittas flash a white wing patch, spread the tail, or fan out the bright breast feathers. At other times, pittas stay hidden by lowering their bright breasts and remaining still.

Most pittas are monogamous (muh-NAH-guh-mus; have one mate). They begin to breed at the start of the wet season, except for one species that breeds year-round. Both sexes build a large, bulky, domed nest that is loosely constructed with leaves and twigs that are placed on a platform made of larger sticks. A side entrance is often made in front of a path or clearing that the female faces as she sits on her eggs. The interior is lined with fibers or finer leaves. The nest may be located on the ground or 3 to 50 feet (1 to 15 meters) above the ground, usually in low vegetation. Females lay two to seven eggs, although most species lay three to four eggs. The incubation period (time to sit on eggs before hatching) is fourteen to sixteen days, with both sexes sharing incubating duties. Young are born naked, blind, and unable to move far. Both males and females share the brooding and feeding of young. The fledgling period (time for a young bird to grow feathers necessary to fly) is eleven to seventeen days. Although able to fly, they are still fed by the adults for seven to ten days, and up to thirty days.

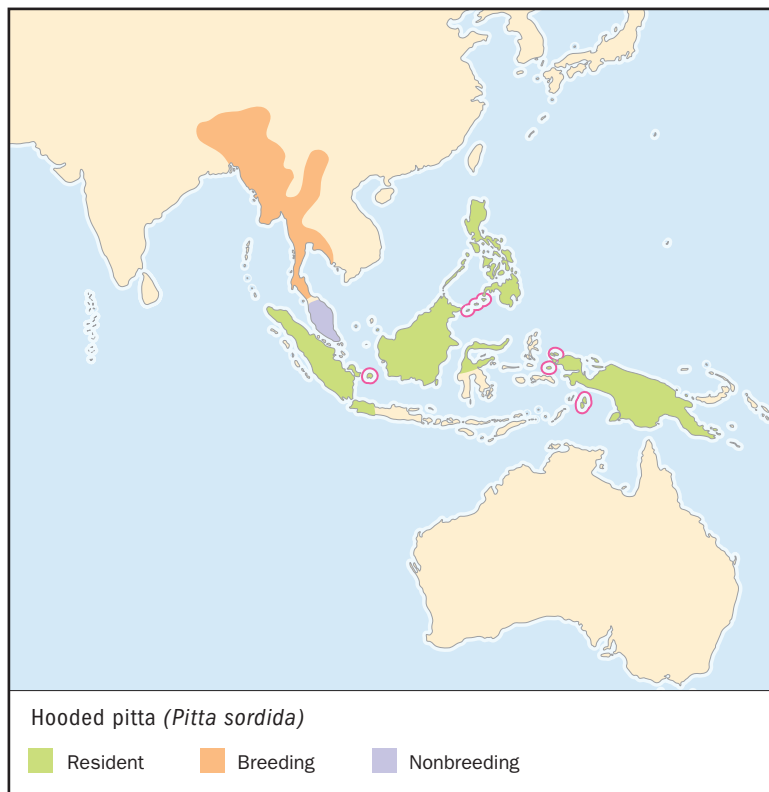
PITTAS AND PEOPLE

People make pets out of pittas, hunt them for food, and enjoy watching them because of their colorful feathers.

CONSERVATION STATUS

One species of pitta is listed as Critically Endangered, facing an extremely high risk of extinction; eight species are listed as Vulnerable, facing a high risk of extinction; and four species are listed as Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



HOODED PITTA *Pitta sordida*

Physical characteristics: Hooded pittas have a black head, thin throat, and bill; dark greenish upperparts and wings; light wing bands; dark green underparts; black flight feathers; a black tail with blue-green tips and red underneath; black belly patch and lower belly; and pale brown to pinkish feet. Females are slightly duller than males. Adults are 6.3 to 7.5 inches (16 to 19 centimeters) long and weigh between 1.6 and 2.5 ounces (42 and 70 grams).

Geographic range: Hooded pittas are found throughout Southeast Asia, from the foothills of the Himalayas to Indonesia, the Philippines, and New Guinea.

Habitat: Hooded pittas inhabit forested and wooded areas including primary rainforests, secondary forests, bamboo forests, scrublands,

overgrown plantations, and cultivated areas. They are found from sea level to 4,900 feet (1,500 meters).

Diet: Their diet consists mostly of insects, beetles, ants, termites, cockroaches, bugs, various larvae (LAR-vee), earthworms, snails, and berries. They hop quickly along the ground among dead leaves in search of food, and often feed in pairs about 16 to 64 feet (5 to 30 meters) apart.

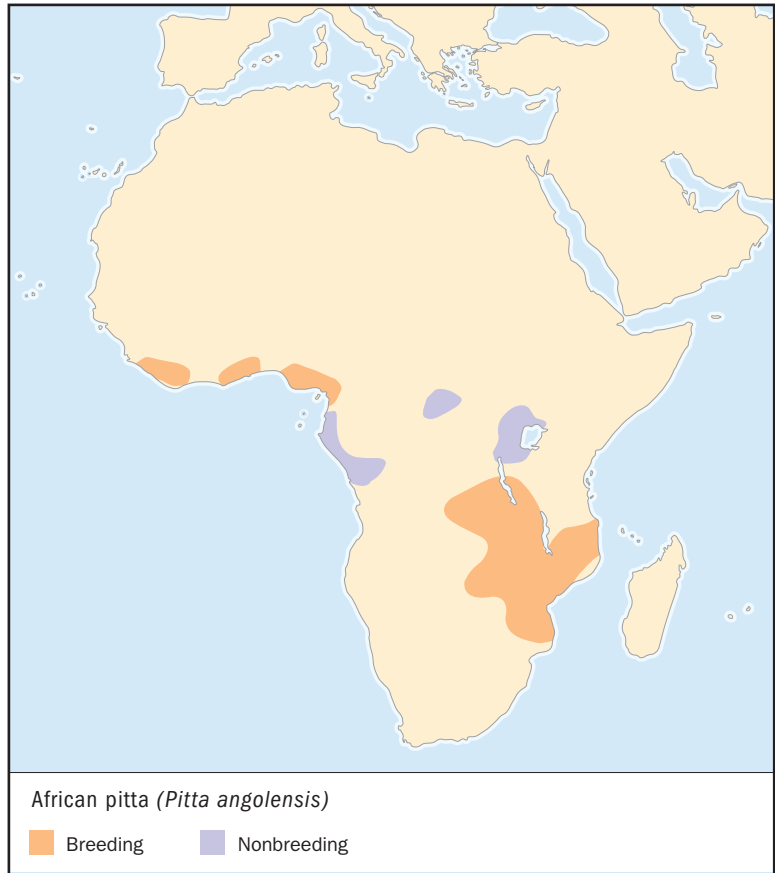
Behavior and reproduction: Hooded pittas are strong fliers that are found alone or in pairs. When alarmed, or in order to distract other birds, they display such features as bowing, head-bobbing, wing flicking, and wing/tail fanning. They breed from February to August. Their call varies depending on region, but generally is a double-noted fluty whistle like “whew-whew.” The dome-shaped nests are usually on the ground, made of roots, leaves (often bamboo), rootlets, moss, and twigs. The inside is lined with finer material. A short path, made of twigs, usually leads up to the entrance. Females usually lay three or four eggs that are white with gray, brown, or dark purple spots. Both sexes share nest construction, incubation, and care of the young. The incubation period is fifteen to sixteen days. The fledgling period is about sixteen days.

Hooded pittas and people: There is no known significance to humans.

Conservation status: Hooded pittas are not threatened. They are common throughout most of their range. ■



Hooded pittas live in forested and wooded areas, where they eat a variety of insects and larvae, as well as earthworms, snails, and berries. (Illustration by Michelle Meneghini. Reproduced by permission.)



AFRICAN PITTA

Pitta angolensis

Physical characteristics: African pittas have a black head with a yellow side stripe; white throat with pink wash; blackish brown bill with a reddish base; deep buff breast and flanks (sides); whitish color under the bill and throat that turns yellow at breast; bright olive green upperparts with blue and black banding on wings; dark azure-blue rump; blackish flight feathers with paler tips; black tail with red underside and blue upperside; and pinkish to grayish white feet. Males and females look alike. Juveniles look similar to adults except they have duller colors. They are 6.7 to 8.7 inches (17 to 22 centimeters) long and weigh between 1.6 and 3.5 ounces (45 and 98 grams).

Geographic range: African pittas are found scattered near the west-central coast of Africa including Sierra Leone, Ghana, Liberia, Nigeria, and Ivory Coast, and in central and southeastern parts of Africa including Tanzania, Malawi, Democratic Republic of the Congo, Cameroon, Zambia, Zimbabwe, Rwanda, Burundi, Central African Republic, Uganda, and Kenya.

Habitat: African pittas inhabit areas of dense undergrowth including evergreen bush country; thickets along waterways, swampy areas, and secondary forests; and tall semi-deciduous and evergreen rainforests. They are found from sea level to 4,100 feet (1,250 meters).

Diet: Their food includes insects, insect larvae, ants, termites, beetles, slugs, grubs, snails, millipedes, caterpillars, and earthworms. The birds sit quietly and watch for prey. If none is found, they go to another perch or fly down to the ground to forage among the leaf-litter of the forest floor.



Behavior and reproduction: African pittas are mostly terrestrial, often defending the territory by singing from the ground or a perch. They are found alone or in pairs during the breeding season. The birds hop quickly on the ground while foraging, and fly short distances when alarmed. Their main call is a “prrrrt” followed by a short, sharp “ouit” or “wheet.” It is believed that they breed during the wet season. Their nest is a loosely made dome that is placed 7 to 26 feet (2 to 8 meters) off the ground usually in thorny vegetation. Nests are made of roots, sticks, twigs, dried leaves, rootlets, and fine fibers, with a side entrance and (sometimes) a platform made of dead leaves and twigs. Females lay one to four eggs, but usually three, which are dull creamy-white, sometimes greenish or pinkish, with reddish brown and purplish spots and lines over gray-lilac markings.

African pittas and people: There are no known significance to humans.

Conservation status: African pittas are not considered to be threatened. They are common in their habitat, however deforestation is hurting much of their environment. ■

African pittas are mostly terrestrial, hopping quickly on the ground while foraging, and flying short distances when alarmed. (Illustration by Michelle Meneghini. Reproduced by permission.)

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

NEW ZEALAND WRENS

Acanthisittidae

Class: Aves

Order: Passeriformes

Family: Acanthisittidae

Number of species: 4 species

PHYSICAL CHARACTERISTICS

New Zealand wrens are very small, compact birds. They have straight or slightly upturned, slender, and pointed bills, which are about the same length as the head. Their wings are short and rounded. These birds have large, stout legs with strong, gripping feet and long, slender toes. The third and fourth toes are joined at their base. These birds have almost no tail. Their soft plumage, feathers, consists of greens, browns, and white. Adults are 3 to 4 inches (8 to 10 centimeters) long, with females substantially larger than males, although males are more brightly colored than females.

GEOGRAPHIC RANGE

New Zealand wrens are found on the North and South Islands, and some of the other surrounding islands of New Zealand.

HABITAT

New Zealand wrens are found in forests, beech forests, scrublands, and alpine, high mountain, areas, especially when large amounts of insects are available. They are usually found from sea level to 1,150 feet (350 meters) in elevation.

DIET

The diet of New Zealand wrens consists mostly of insects. They forage, search for food, alone, as a bonded male and female couple, or as a family group. They forage by crawling along the bark of trees and among the leafy parts of trees in

phylum

class

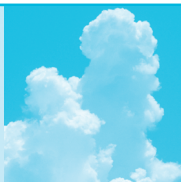
subclass

order

monotypic order

suborder

▲ family



MALE HELPERS FIND FUTURE MATES

Researchers have found that most rifleman adult helpers were unpaired males that later in the breeding season became paired with female offspring from a nest they had earlier helped to feed and protect. Although studies have not proven this, many experts believe that finding a female mate is easier when unmated males help out with taking care of young birds. Rifleman are a species of New Zealand wren.

search of insects and small arthropods, invertebrate animals (animals without backbones) with jointed limbs. They sometimes forage on the ground.

BEHAVIOR AND REPRODUCTION

New Zealand wrens are weak fliers, with soft songs and calls. When landing on a perch from a short flight they often bob their body up and down. Their breeding season is from August to March. They are monogamous (muh-NAH-guh-mus), having only one mate, birds that form long-lasting pair bonds. The mating pair builds a complex nest in tree and rock crevices, narrow cracks or openings, in tree hollows or behind loose bark, in holes within tree trunks, earthen banks, walls within human-made structures, and fence posts, and sometimes on the ground in protected places. The nest consists

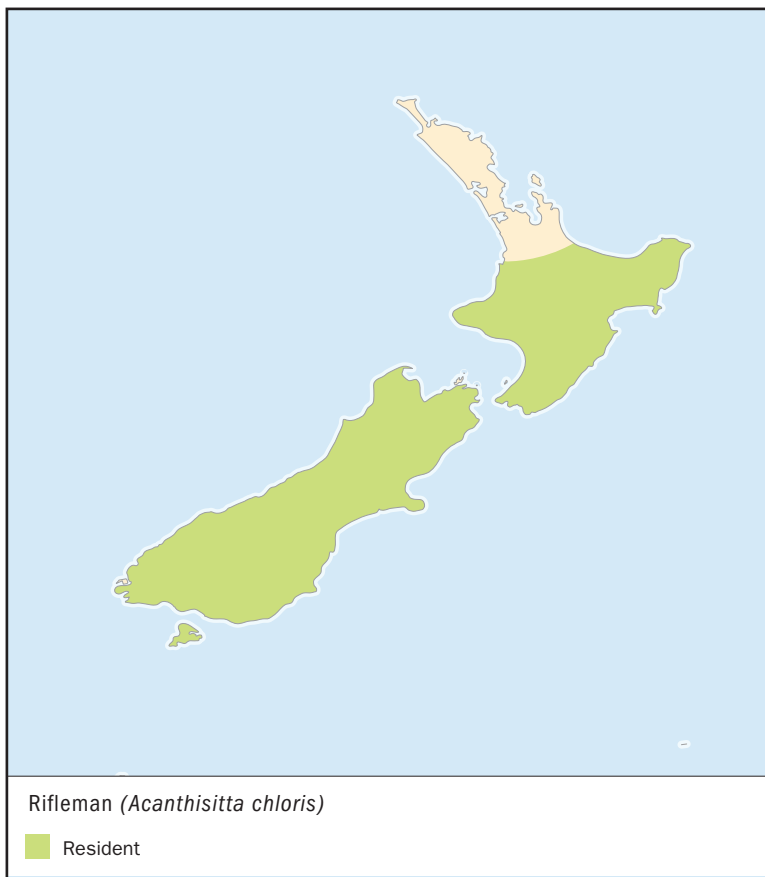
of loosely woven materials such as moss, roots, leaves, ferns, and plant debris. There is a side entrance into the nest, which is often lined with feathers. Females usually lay two to five white eggs. Males feed nesting females and both parents feed their young. After the young leave the nest, they remain with the parents for several weeks.

NEW ZEALAND WRENS AND PEOPLE

With very few predators, animals that hunt them for food, in their customary habitats, most New Zealand wrens are not able to cope with new predators, such as those introduced by humans. It is also difficult for most of them to adapt to modifications within their environments.

CONSERVATION STATUS

Two species of New Zealand wrens are listed as Extinct, no longer existing. The two remaining species are fairly common and protected by laws.



RIFLEMAN *Acanthisitta chloris*

SPECIES ACCOUNT

Physical characteristics: Riflemen are the smallest living bird species in New Zealand. They have greenish upperparts and whitish undersides with yellow wash on the sides. Females are generally duller than males and are brown striped. Males have a bright yellow-green back while females have a back that is striped with darker and lighter browns and flecked with red-brown spots. Both sexes have a slightly upturned bill, with the female bill being a little more upturned. They have white bellies and white markings above the eyes. Their wings have a yellow bar with a white spot at the end of the bar and yellowish rumps and flanks. Males are generally smaller than females,

Rifleman have been able to adapt to environments with non-native plants, allowing them to remain successful as humans have introduced new plants to New Zealand. (Illustration by Barbara Duperron. Reproduced by permission.)



with adults about 3 inches (8 centimeters) in length and weighing between 0.2 and 0.3 ounces (6.3 and 9.0 grams).

Geographic range: Rifleman are found on both main islands (North Island and South Island) of New Zealand, except for the northern portion of the North Island. They are also found on Stewart Island, just off the southeastern coast of South Island, and the Great Barrier and Little Barrier Islands.

Habitat: Rifleman are located in various habitats including forests, scrublands, farmlands, and disturbed and regenerating habitats. They adapt easily to new environments composed of plant species not native to their normal habitats.

Diet: Their diet consists of insects, spiders, and other small invertebrates, animals without backbones. Males take prey from tree leaves while females find food within tree bark. The female's slightly more upcurved bill helps the female pry and loosen bark away from trees. They often work their way up and around tree trunks in a spiral route that takes them from the base of a tree up to 20 to 30 feet (6 to 9 meters) off the ground.

Behavior and reproduction: Rifleman are lively, diurnal, active during the day, birds. Their call is a sharp, high-pitched, cricket-like "zipt"

or “zsit” that is sounded either singly or in a rapid series of separate notes. Most of their activity consists of foraging in trees, going from one tree to another, usually in an established route. Rifleman are not very strong fliers, so, they limit their flights to short ones from tree to tree, and rarely go out of their small familiar territory. They rarely go to the ground. Sometimes when perching on a branch, rifleman will quickly flick their wings.

Rifleman are monogamous birds, forming long-lasting pair bonds. Their breeding season is from August to January. Males do most of the construction of the nest. The typical nest is a rather complex structure in a tree crevice, sometimes with a dome-like roof and inside lined with spider webs and mosses. Females lay two to four white eggs. About ten days before and during the egg laying process, males will bring food to females up to nine times an hour. Both parents usually raise two broods, young birds that are born and raised together, each year. The incubation period, time that it takes to sit on eggs before they hatch, is nineteen to twenty-one days. The nestling period, time necessary to take care of young birds unable to leave nest, is twenty-three to twenty-five days, but can last up to sixty days. Eggs weigh about 20 percent of the female’s weight, and are laid every other day. Males incubate during the day and females incubate at night. Hatchlings are born in an undeveloped condition, so they take longer than most birds to develop into a stage where they can fly away.

Parents often use one to three adult or juvenile helpers to help feed nestlings and fledged offspring, those able to fly. For a first clutch, group of eggs hatched together, helpers are not usually related to the parents. They help to feed and defend the chicks, and to clean the nest. Some helpers only help with one nest, but others divide their time between several nests. With helpers, parents often have less work to do. Fledged young birds from the first brood often help to feed the chicks of the second brood. The nest for the second brood is often started before the first brood has left the first nest. This nest is smaller, loosely built, and unlined. Males do not bring food to females before and during the second egg-laying period. The second clutch of eggs is usually one egg less than the first clutch.

Rifleman and people: There is no known significance between rifleman and people.

Conservation status: Rifleman are fairly common and protected by New Zealand laws and a strong conservation program. They are the most successful species of the New Zealand wrens. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

OVENBIRDS

Furnariidae

Class: Aves

Order: Passeriformes

Family: Furnariidae

Number of species: 218 species

PHYSICAL CHARACTERISTICS

Ovenbirds, also called horneros (or-NEYR-ohz), are small-to medium-sized, rust-to-brown colored birds. They have slender, pointed bills that range in length from short to long. Their wings are relatively short and are rounded or pointed at the tips. Ovenbirds have medium length legs and feet with front toes that are joined at the base. These birds have rufous, reddish, heads and white throats in many species. There is a light stripe over the eyes. They have brownish backs, light brown-and-white speckled or streaked bellies, rufous wings with brownish red or white bands, and rufous tails. Males and females are similarly colored. Adults are 5 to 11 inches (13 to 28 centimeters) long and weigh 0.3 to 1.6 ounces (9 to 46 grams).

GEOGRAPHIC RANGE

Ovenbirds are found from central Mexico to Patagonia in southern South America.

HABITAT

Ovenbirds inhabit forests of various types, brushlands, pampas (grasslands), alpine areas (high mountain regions), and semi-deserts.

DIET

Their diet consists of mostly insects, spiders, other invertebrates, animals without backbones, and sometimes small seeds. They forage, search for food, among litter on the ground, in

phylum

class

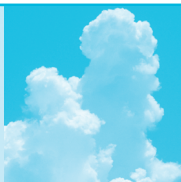
subclass

order

monotypic order

suborder

▲ **family**



OVENBIRDS ARE NAMED FOR A NEST

Rufous horneros build rounded nests out of moist clay, like a traditional clay baker's oven. They first build a base, often on a stout tree branch. They bring in small clumps of clay, mud, and some straw and hair to the construction site with their bill. The outer walls are built next, followed by the roof, which is dome-shaped. An entrance hole is left on one of the sides. Inside, a lining is made of fine fibers of soft grass and other plant tissues.

foliage, leaves, and on bark and epiphytes (EPP-uh-fytes), plants such as mosses that grow on another plant but do not depend on that host plant for nutrition, of shrubs and trees.

BEHAVIOR AND REPRODUCTION

Ovenbirds do not migrate, and are found usually alone or as a breeding pair, but sometimes in small groups. Some species are found primarily on the ground and others remain mostly in trees. When foraging on the ground they tend to walk and hop. While foraging in trees, some species are very quick as they search through foliage and finer branches, while other species are very agile as they forage on tree trunks. Some species are strong flyers, while others are weak and unable to fly long distances. Their calls are harsh and scolding, and their songs consist of a series of whistles and trills.

Ovenbirds build various shapes and types of nests. Many species build loose nests of plant fibers such as twigs and moss inside a cavity in a tree, among rocks, or in dense foliage. Other species make nests of lumps of moist clay, each about 0.1 ounces (3 grams) in weight, which is carried inside the bill. When completed, the nest looks like an oven, often weighing about 10 pounds (4 kilograms). One mated pair of ovenbirds may work on several nests at the same time. Other species dig tunnels from 3 to 10 feet (1 to 3 meters) long into an earthen bank or cliff. Still other species build small, spherical, hanging nests in trees, which are entered from a hole underneath. The last species group builds the largest of ovenbird nests, up to 3 feet (1 meter) in height, with several chambers enclosed inside the nest.

Females lay two to six eggs that are usually white but can be blue or greenish. Both parents share in egg incubation, sitting on the eggs, and in the care of nestlings, young birds unable to leave nest, and fledglings, birds that has recently grown the feathers needed for flight. The incubation period is fifteen to twenty-two days, and the nestling period, time necessary to take care of young birds unable to leave nest, is thirteen to twenty-nine days.

OVENBIRDS AND PEOPLE

The ovenbird species called the rufous hornero is the national bird of Argentina. Birdwatchers like to view these birds. There is little other significance between ovenbirds and people.

CONSERVATION STATUS

Three species of ovenbirds are listed as Critically Endangered, facing an extremely high risk of extinction, no longer existing in the wild. Nine species are listed as Endangered, facing a very high risk of extinction in the wild in the near future, and fifteen species are Vulnerable, facing a high risk of extinction in the wild. There are eighteen species considered Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



RUFOUS HORNERO *Furnarius rufus*

Physical characteristics: Rufous horneros are large ovenbirds with slightly rounded to nearly square tails. They have short-to-medium, pointed bills that are almost straight. The upper part of the bill is a brownish gray, to grayish or dark brownish while the lower part of the bill is pale horn to pinkish with a dark tip. They have rufous-brown foreheads and dull brown crowns, top of head. This species has



The rufous hornero, like many other ovenbirds, builds a nest out of mud, clay, dung, and straw, that looks like an old-fashioned oven. (Erwin and Peggy Bauer/ Bruce Coleman Inc. Reproduced by permission.)

a tan stripe over the eyes. Their throats are whitish with very rufous hindnecks, back of the neck. The back and rump are rufous-brown with some pale edgings and the belly is pale buff or tan. Their flanks, sides, are tawny, copper color. The primary feathers are dull brownish with light rufous wingbands. Their tails are somewhat rufous in color and their lower legs and toes are grayish, brownish, or blackish. Males and females are similar in color. Juveniles are paler on the undersides. Adults are 6.3 to 9.1 inches (16 to 23 centimeters) long and weigh between 1.1 and 2.3 ounces (31 and 65 grams).

Geographic range: They are widely found in Bolivia, much of southern Brazil, Paraguay, Uruguay, and northern and central Argentina.

Habitat: Rufous horneros usually inhabit scrublands, pastures, agricultural lands, urban parks, and gardens. They are often found near streams, rivers, ponds, or lakes; usually in lowlands but they can be found to about 8,200 feet (2,500 meters), and occasionally up to 12,150 feet (3,500 meters).

Diet: Their diet consists of insects, other small invertebrates, and seeds. The bird forages on the bare ground and among leaf litter, often probing into soft dirt with its bill.

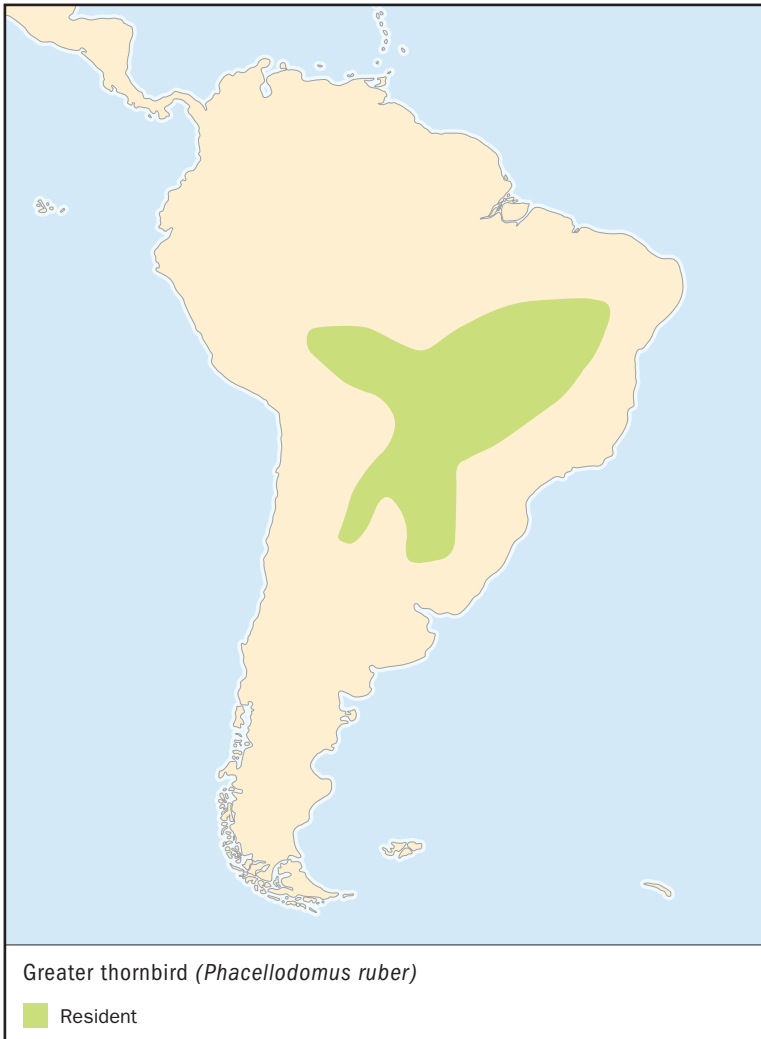
Behavior and reproduction: Rufous horneros do not migrate. They are usually found alone or in pairs on the ground where they run and

hop, and perch in open spaces within shrubs. Their song is a loud, fast, rhythmic series of notes such as “kweep!” and their calls include a sharp “jeet!,” “jeah,” or “krip,” often sounded as a series of notes. Pairs of birds often sing back and forth with each other.

The breeding season of the monogamous (muh-NAH-guh-mus), having only one mate, birds is in the spring-summer, September to February. Rufous horneros will defend their breeding territory, where they construct a large nest made up of thousands of small clumps of moist mud, clay, some dung, and straw carried to a nest site with their bills. The inside of the nest is lined with bits of grasses and stems. The spherical, oven-shaped structure is usually placed on a tree stump, fencepost, telephone pole, or rooftop; but can also be placed on older nests, bare ground, or rock. The entrance is usually placed on the side of the nest. Two to five eggs are laid from September to December. The incubation period is fourteen to eighteen days. Both males and females incubate eggs and take care of the nestlings. The nestling period is twenty-three to twenty-six days.

Rufous horneros and people: The rufous hornero is the national bird of Argentina. They are often found near human dwellings.

Conservation status: Rufous horneros are not threatened with extinction. They are widespread and abundant throughout their habitat. ■



GREATER THORNBIRD

Phacellodomus ruber

Physical characteristics: Greater thornbirds are the reddest in color and among the largest in size of the ovenbirds. This species has a stout, plump, body and a long tail. They have a short, pointed bill that is slightly downcurved. The upper part of the bills is blackish and the lower part of the bill is pale gray to grayish green. They have a rufous-brown to grayish brown face with a light brown stripe over the eyes.

Greater thornbirds move about cautiously, not wanting to be seen, usually alone or in pairs. (Illustration by Jonathan Higgins. Reproduced by permission.)



There is a reddish chestnut crown with faint pale shaft streaks; a rufous cap on the head; and a reddish brown to olive-brown hindcrown. Wings are rufous-chestnut. They have brown backs, rufous tails and whitish bellies and throats. Their rumps are brown tinged with red and their toes are gray to olive. Sexes are similar in appearance. Juveniles lack the crown patch and have a mottled, speckled, brownish breast. Adults are 7.5 to 8.3 inches (19 to 21 centimeters) long and weigh between 1.2 to 1.8 ounces (35 and 51 grams).

Geographic range: They are found in Bolivia, central Brazil, Paraguay, northern Argentina, and, possibly, in far northern Uruguay.

Habitat: Greater thornbirds inhabit the undergrowth of humid tropical forests, thickets on the banks of waterways, woodlands and scrublands. They especially like to be near ponds and other surface waters. They are found from sea level to elevations up to 4,600 feet (1,400 meters).

Diet: Their food includes insects, ants, and other small invertebrates. They are usually found foraging on the forest floor, around dense vegetation, and near the edges of water bodies such as marshes.

Behavior and reproduction: Greater thornbirds move about cautiously, not wanting to be seen. They usually move about alone or in pairs. Their song is a long series of loud, abrupt, accelerating notes such as “chip,” with a sharp call of “check check” and “chweet.” Their breeding season is from October to January. They build large, bulky nests that look similar to a cylinder or cone. The birds use sticks,

twigs, and branches, often thorny ones, as materials to build the nest, which often contains several chambers and has a side entrance at the lower end. The interior of the nest is usually lined with fine grasses and feathers. The nest is usually attached to an outer, drooping branch of a tree or other low vegetation. Females lay three to five eggs, but five eggs are rare. Both sexes incubate the eggs and raise the nestlings.

Greater thornbirds and people: There is no known significance between people and greater thornbirds.

Conservation status: Greater thornbirds are not threatened with extinction. They are widespread and locally abundant throughout most of their habitats. They are protected in parts of their range, such as Pantanal National Park in Brazil and Esteros del Iberá and Calilegua National Parks in Argentina. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

WOODCREEPERS

Dendrocolaptidae

Class: Aves

Order: Passeriformes

Family: Dendrocolaptidae

Number of species: 52 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Woodcreepers range in length from 5.5 to 14 inches (14 to 36 centimeters). They have a slender body and long rounded wings. Tails are long with feather shafts that are sharp and stiff. Woodcreepers have short legs and strong claws. Bill shape varies tremendously in the group. Some species have curved sickle-shaped bills while other species have short bills. Woodcreepers are generally brown, brownish olive, brownish red or brownish yellow in color. Many species have stripes, bands, or spots. Males and females are similar in coloration and general appearance.

GEOGRAPHIC RANGE

Woodcreepers are found throughout the Central American and South American tropics. They occur from southern Mexico to northern Argentina. The greatest species diversity of woodcreepers is found in tropical Amazonia, the Amazon River basin area.

HABITAT

Woodcreepers are found in many types of rainforests, montane (mountain) forests, and brush lands.

DIET

The diet of most woodcreepers includes insects, spiders, and other invertebrates, animals without a backbone. Some species may eat larger prey such as small lizards. A few species also eat small fruits. In some species, individuals forage, or look for food, in mixed-species flocks that include other species of birds. Most

woodcreepers forage, look for food, in trees, searching for insects and other prey hidden in the bark of the trunk and branches or among the mosses, lichens, and other plants that grow on branches. Woodcreepers walk, or “creep” up the tree trunk looking for food. Once they reach the top of one tree, they fly to the base of another tree and begin to forage upwards again. The woodcreepers’ stiff tails help support them as they ascend a tree. Some species are also able to catch insects mid-flight, and others are known for following army ants and catching prey that the ants have flushed out.

BEHAVIOR AND REPRODUCTION

Woodcreepers stay in their breeding area all year long. They do not migrate. Some species of woodcreepers live in male-female pairs all year long, while others are solitary except during the breeding season.

At night, woodcreepers generally roost in natural tree-cavities or old woodpecker holes, with each individual occupying a separate hole.

Woodcreepers sing primarily at dusk, often while they are feeding. Their songs are simple and clear, frequently made up of either soft trills or a series of loud, ringing tones.

Woodcreepers nest in holes in tree-trunks, sometimes those which were once used by woodpeckers. They build nests from small pieces of plant material. The female generally lays two or three white eggs. Eggs hatch in fifteen to twenty-one days. The young fledge, or grow the feathers needed to fly, in nineteen to twenty-three days. Older nestling and fledgling woodcreepers spend the nights in holes separate from the parents. Both parents participate in all phases of reproductive activity, including building the nest, incubating the eggs, and feeding the hatched young.

WOODCREEPERS AND PEOPLE

Woodcreepers, along with other tropical birds, attract tourists and birdwatchers to rainforest habitats. They have no other known impact on or importance to humans.

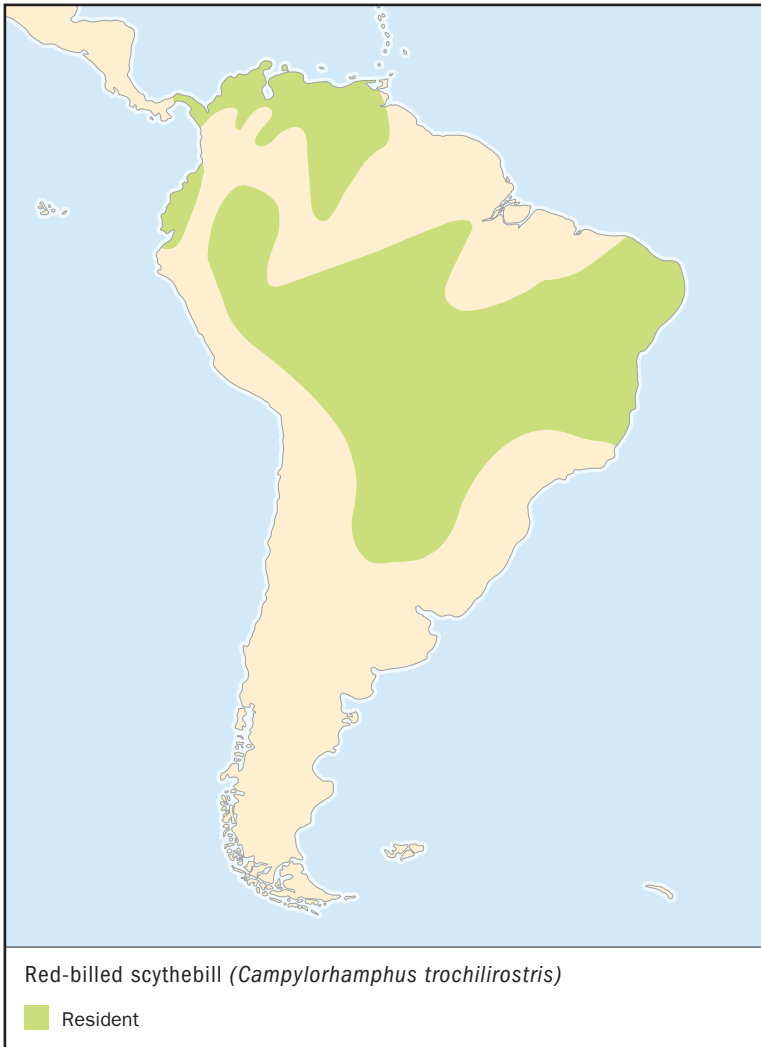


CAVITY NESTERS

Woodcreepers are one of many groups of birds known as cavity nesters, birds that nest in tree cavities, or holes. Tree cavities occur naturally or are purposely excavated, dug out. Species that excavate their own nest cavities are known as primary cavity nesters, and include groups such as woodpeckers. Woodcreepers, on the other hand, are secondary cavity nesters, species that are unable to excavate their own cavities. Secondary cavity nesters use either naturally occurring cavities or cavities that have been excavated by other species.

CONSERVATION STATUS

The moustached woodcreeper is considered Vulnerable, facing a high risk of extinction in the wild. It occupies areas of eastern Brazil, where populations have declined due primarily to large-scale logging and habitat destruction for farming. Another species, the greater scythebill, is considered Near Threatened, likely to qualify for a threatened category in the near future, because of habitat destruction. In addition, a number of other woodcreeper species have also suffered recent declines in numbers but are not yet considered in danger of extinction.



RED-BILLED SCYTHERBILL

Campylorhamphus trochilirostris

SPECIES ACCOUNT

Physical characteristics: The red-billed scythebill is one of the larger woodcreeper species, with a body 9.5 to 11 inches (24 to 28 centimeters) in length. It has a long tail and a long, slender, downwardly-curved bill. Its back and tail are brownish red in color, while the belly is a lighter cinnamon-brown shade. The head and throat are covered with brown and white streaks.

Geographic range: The red-billed scythebill has a wide range, occurring in portions of Panama, Venezuela, Colombia, Ecuador, Peru, Bolivia, Brazil, Paraguay, and northern Argentina.

Habitat: The red-billed scythebill is one of the most widely-distributed woodcreeper species. It inhabits rainforests, forests, and forests in mountainous regions up to a height of 6,600 feet (2,000 meters).

Diet: Red-billed scythebills eat insects and other invertebrates by picking them off the trunks and branches of trees.

Behavior and reproduction: Red-billed scythebills are either solitary or found in pairs. While looking for food, they sometimes join flocks that include other bird species. Two or three eggs are laid in an abandoned woodpecker hole or other tree cavity. Both parents help incubate eggs and feed nestlings.

Red-billed scythebills and people: Red-billed scythebills are not known to have any special significance to humans.

Conservation status: The red-billed scythebill is not considered threatened. ■

FOR MORE INFORMATION

Books:

Perrins, Christopher, ed. *Firefly Encyclopedia of Birds*. Buffalo, NY: Firefly Books, 2003.

Web sites:

“Dendrocolaptidae (Woodcreepers).” The Internet Bird Collection. <http://www.hbw.com/ibc/phtml/familia.phtml?idFamilia=107> (accessed on April 25, 2004).

“Family Dendrocolaptidae (Woodcreepers).” Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Dendrocolaptidae.html#Dendrocolaptidae> (accessed on April 25, 2004).

“Woodcreepers.” Bird Families of the World, Cornell University. <http://www.es.cornell.edu/winkler/botw/dendrocolaptidae.html> (accessed on April 25, 2004).

ANT THRUSHES

Formicariidae

Class: Aves

Order: Passeriformes

Family: Formicariidae

Number of species: 244 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Ant thrushes, also called antbirds, antcatchers, antpittas, antshrikes, or antwrens, are a family of small to medium-sized perching songbirds found in the rainforests of Central and South America. There are two major divisions within the ant thrush family, based on where the birds spend most of their time. About fifty-six species live on or near the forest floor and as a group are called ground antbirds. About 188 species live in the canopy, or forest treetops. These birds are sometimes called typical antbirds.

The bodies of antbirds vary in length from 4 to about 15 inches (10 to 38 centimeters). Some antbirds have short, stiff tails that they hold upright, while others have tails as long as their body that droop. Ground antbirds tend to be larger than canopy-dwelling antbirds and have longer, stronger legs and short toes for running and hopping. Antbirds that live in the canopy have developed special longer toes that allow them to grip thin branches for long periods without using much energy.

Antbirds do not migrate, or move seasonally from one region to another. As a result, they have evolved, changed over time, to have stubby, rounded, relatively weak wings that are best suited for flying only short distances.

Antbirds eat mainly insects. Their bills are specially designed for this task. Antbird bills curve slightly downward and in some of the larger species have a hook at the tip. Larger species of antbirds also have a “tooth,” or rough spot, inside the bill that helps them to hold on to or tear up food. Smaller antbirds have a smooth bill and no “tooth.”

Antbirds are not the most colorful birds in the rainforest. In fact, they are rather dull. They range in color from black to gray to brown. Male and female ground antbirds usually look quite similar. However, canopy-dwelling males are often black or gray with some white feathers, while females are brown and often marked with a pattern of light and dark spots. Their coloring makes them difficult to see on the forest floor or among the shifting shadows and sunlight of the canopy.

GEOGRAPHIC RANGE

Antbirds are found in tropical and subtropical rainforests from southern Mexico to northern Argentina. However, the greatest number of species is found in the rainforest of the Amazon River basin in Brazil and the Orinoco River basin in Venezuela.

HABITAT

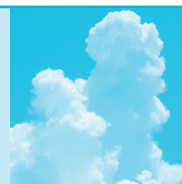
Antbirds live in damp, shrubby, forested regions and woodland areas in the tropics, including areas where the original trees have been cut down and new trees are appearing. Species in this family can be found from sea level to high on forested mountains, up to 10,900 feet (3,300 meters).

DIET

Antbirds are insectivores, or insect eaters. They eat many different insects and insect-like bugs including crickets, beetles, spiders, centipedes, and lice. Larger antbirds also eat snails, frogs, lizards, small snakes, mice, and young birds. They use their strong bill and “tooth” to kill this larger food. Some species eat fruit and seeds in addition to insects.

BEHAVIOR AND REPRODUCTION

Antbirds were given their name because of their special feeding behavior. In the rainforest colonies of ants often move together in huge swarms or columns when they are hunting for food. As the ants move, they stir up insects and small animals, such as mice and lizards. Antbirds have learned to take advantage of the movement of these ants, especially swarms of red army ants and black rain ants. The antbirds follow a column



SOS FOR DANGER

Most species of ant thrushes have white spots on their back that are hidden under their wings when they are resting or calm. When these birds think that they are in danger, they flash these white spots in a quick off-and-on pattern. Scientists believe this is a kind of Morse code that lets other birds in the area know that something threatening is nearby.

Flying Through the Mail

In 1980 the Central American country of Belize featured the barred antshrike on its 25 cent postage stamp.

of moving ants and pick off insects and small animals that are trying to get away from the hungry ants. In a sense, the ants do the birds' hunting for them.

Ant colonies are so important to antbirds that older male birds will drive younger, weaker birds out of their territory in order to keep them away from the ant colonies. During nesting season, antbirds usually wait for ant columns to pass their nests, but other times of the year they actively look for and follow moving ant colonies.

Antbirds also perform a grooming or cleaning behavior that involves ants. The birds pick up ants in their bills and rub them into their feathers. This is called "anting." Scientists believe that when the ants are crushed, their bodies release formic acid, which kills parasites, organisms that live on other organisms, living on the birds' feathers. A few antbird species also allow live ants to crawl through their feathers and eat insects that are attached to their skin.

Although much is not known about the reproductive behavior of antbirds, it appears that they mate with a single partner for life. The location and shape of antbird nests varies depending on the species. Ground antbirds often build closed, rounded nests directly on the forest floor. Other species build deep cup-shaped nests on low branches. Some species use holes in trees or rotting logs.

Antbirds usually lay two light-colored eggs that hatch within fourteen to seventeen days. Both parents share the job of incubating, sitting on the nest to provide warmth for chick development, the eggs. Young antbirds are able to leave the nest and hunt for food soon after they are born.

ANT THRUSHES AND PEOPLE

The ant thrush family is of interest mainly to ornithologists, scientists who study birds, and birdwatchers interested in ecotourism, travel for the purpose of studying wildlife and the environment.

CONSERVATION STATUS

In 2003, four species of antbirds were considered Critically Endangered, facing an extremely high risk of extinction, or dying out, in the wild. These were the fringe-backed fire-eye, the Rio de Janeiro antwren, the Alagoas antwren, and the Rondonia bushbird. Sixteen other species were considered

Endangered, facing a very high risk of extinction, and eleven species were classified as Vulnerable, facing a high risk of extinction. The main reason these birds are at risk for extinction is loss of habitat due to human activities such as farming, mining, and development.



SPECIES ACCOUNTS

BARRED ANTSHRIKE *Thamnophilus doliatus*

Physical characteristics: Barred antshrikes, sometimes called Chapman's antshrikes, are small, noisy birds about 6 inches (15 centimeters) long. Males are black with white bars and a black crest of feathers on their head. Females have black stripes, but are cinnamon or

reddish brown colored, instead of white, and have a brown crest. Both males and females have yellow eyes, long tails, and strong black bills.

Geographic range: The barred antshrike is one of the most common antbirds. It can be found living year-round from southern Mexico to northern Argentina east of the Andes Mountains. Although it is widespread in Brazil, it is not found in the center of the Amazon rainforest.

Habitat: Barred antshrikes live on the edges of the tropical rainforest, but not deep in the center of the forest. These birds can be found in scrubland, along roads, in open woodland and clearings, and in gardens or abandoned lots. They live in both humid and dry areas at elevations between 330 and 6,600 feet (100 and 2,000 meters).

Diet: Like all antbirds, barred antshrikes eat insects and insect-like bugs. They normally hunt for food with mixed groups of other birds in an area between the lowest bushes and the treetops.

Behavior and reproduction: Barred antshrikes mate for life with a single partner and tend to stay together throughout the year. They usually lay two eggs in a nest made of grasses. Nests are often built in low bushes. Both parents incubate the eggs and care for the young.

Barred antshrikes and people: Barred antshrikes have no special significance and little economic impact on people. They are of interest mainly to birdwatchers and ecotourists.

Conservation status: Barred antshrikes are not threatened. They are common birds found across a wide area of Central and South America. ■



GRAY ANTIBIRD

Cercomacra cinerascens

Physical characteristics: The gray antbird is a small bird of about 6 inches (16 centimeters) with a rather long tail. It is dark gray with a white band at the tip of the tail.

Geographic range: Gray antbirds are found in the rainforests of northern South America, including Guyana, the southern part of



Gray antbirds live in dense rainforests. They are most abundant in the Amazon River basin. (Illustration by Dan Erickson. Reproduced by permission.)

Venezuela, parts of Colombia and Ecuador, eastern Peru and northern Bolivia. They are most abundant in the Amazon River basin of Brazil.

Habitat: Gray antbirds live in the forest canopy in dense rainforests and on heavily forested mountain slopes below an elevation of 2,300 feet (700 meters).

Diet: Gray antbirds eat insects and insect-like bugs.

Behavior and reproduction: Gray antbirds form pairs that stay together, although they sometimes hunt for food in a group with birds of other species. Little is known about their nesting habits.

Gray antbirds and people: Gray antbirds are of interest mainly to birdwatchers and ecotourists.

Conservation status: Gray antbirds are not threatened; they are abundant in many places. They are found across a wide area of northern South America. ■

FOR MORE INFORMATION

Books:

Hilty, Steven L. *Birds of Venezuela*. Princeton, NJ: Princeton University Press, 2003.

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Web sites:

Gleyzer, Artem, Seth Weith-Glushko, and Abhiram Vijay. "Project:Antbird." Academy for the Advancement of Science and Technology and The National Zoo. <http://www.bergen.org/Smithsonian/Antbirds/homeantb.htm> (accessed on April 24, 2004).

Robertson, Don. "Bird Families of the World." CREARGUS@Monterey Bay. <http://www.montereybay.com/creagrus/index.html> (accessed on April 27, 2004).

family CHAPTER

TAPACULOS Rhinocryptidae

Class: Aves

Order: Passeriformes

Family: Rhinocryptidae

Number of species: About 54
species

PHYSICAL CHARACTERISTICS

Tapaculos are a diverse family of small perching birds that live in Central and South America. They range in size from about 4 to 9 inches (10 to 23 centimeters) and weigh anywhere from 0.4 to 6.5 ounces (11 to 185 grams). Tapaculos are one of the most primitive families of songbirds.

Tapaculos are also one of the most varied families of birds. The fifty or so species have only a few physical characteristics in common. Tapaculos are very poor flyers. They have short, rounded wings, but unusually strong feet and large claws. Internally the sternum, or breastbone, of these birds is different from the sternum of birds that are better flyers. In most birds, even domestic chickens, the sternum has a projection or bulge called a keel. The keel creates more surface area for the muscles used in flight to attach to the bone. Birds like tapaculos that are nearly flightless do not need this extra area where flight muscles can attach, so their breastbones do not have a keel.

Tapaculos are generally solid color grayish or brown birds, although some have lighter-colored spots or patterns. In most species, the males and females look similar, although the females tend to be slightly smaller. Most tapaculos have short tails. Their feathers fall out easily and it is thought that this is a way of fooling predators, animals that are hunting them.

Different species of tapaculo may be difficult or impossible to tell apart by sight. Some species look alike and can only be identified based on their song, their weight, and the habitat in which they live. Others are so similar that they can only be told

phylum

class

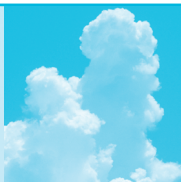
subclass

order

monotypic order

suborder

▲ family



WHO IS IN AND WHO IS OUT?

Tapaculos are some of the hardest birds to classify. Scientists are still not sure exactly how many species there are in this family. New species are being discovered, and in 1997 several species were reclassified. In the past, tapaculos were considered separate species if they had different songs or lived in different environments and did not interbreed. Today genetic and biochemical evidence suggests that some of these classifications may be wrong and the number of tapaculo species may change again.

apart by genetic testing. Ornithologists, scientists who study birds, are not in complete agreement about how many species of tapaculos exist and how they should be classified.

GEOGRAPHIC RANGE

Tapaculos are found from Costa Rica in southern Central America to Tierra del Fuego, Argentina, at the southern tip of South America. Many species live in the Andes Mountains in western South America. They are mostly absent from the hot, humid rainforest of the Amazon and Orinoco river basins in Brazil and Venezuela.

HABITAT

Most species of tapaculos prefer high, cool, tropical mountain rainforests. Only one kind of tapaculo lives in the lowland Amazon rainforest. Several members of this family have adapted to life in dry, desert climates or dry grasslands. Some species have extremely lim-

ited habitats, which puts them at risk for extinction, or dying out. For example, one type of tapaculo lives only in the tall grass of certain marshes in Brazil. Species tend to separate by elevation, height of land above sea level, so that in the Andes, a single mountain may be home to four or five species of tapaculos all living at different elevations that do not overlap.

DIET

Tapaculos eat mainly insects and spiders. Some species also eat berries. These birds feed by walking or hopping across the forest floor, then scraping their feet against the ground, turning over the moss and leaves with their strong claws to look for bugs. A few species hop through low branches eating the insects they find there.

BEHAVIOR AND REPRODUCTION

Tapaculos have not been well studied, and not much is known about their behavior. They tend to be shy birds that spend much of their time on the forest floor. They are so hard to observe, in fact, that scientists know several species only by

their song. It appears that these birds identify each other and choose their mates by sound rather than sight. This may be one reason why their feathers are dull and why some species look the same, but sound different.

In the tapaculos that have been studied, it appears that birds who mate form permanent pairs, but if one member of the pair dies, another mate is chosen almost immediately. The nests of fewer than half the species of all tapaculos have been observed. Of those that are known, most species build their nests in the ground at the end of tunnels. The birds either dig the tunnels themselves or take over empty animal burrows. Some species use hollow logs instead of digging tunnels. A few build cup nests in low branches.

Normally tapaculos lay two or three eggs. In some species both males and females sit on, incubate, the eggs for about two weeks before they hatch. The young birds are naked when they hatch and are cared for by both parents until they are ready to leave the nest several weeks later.

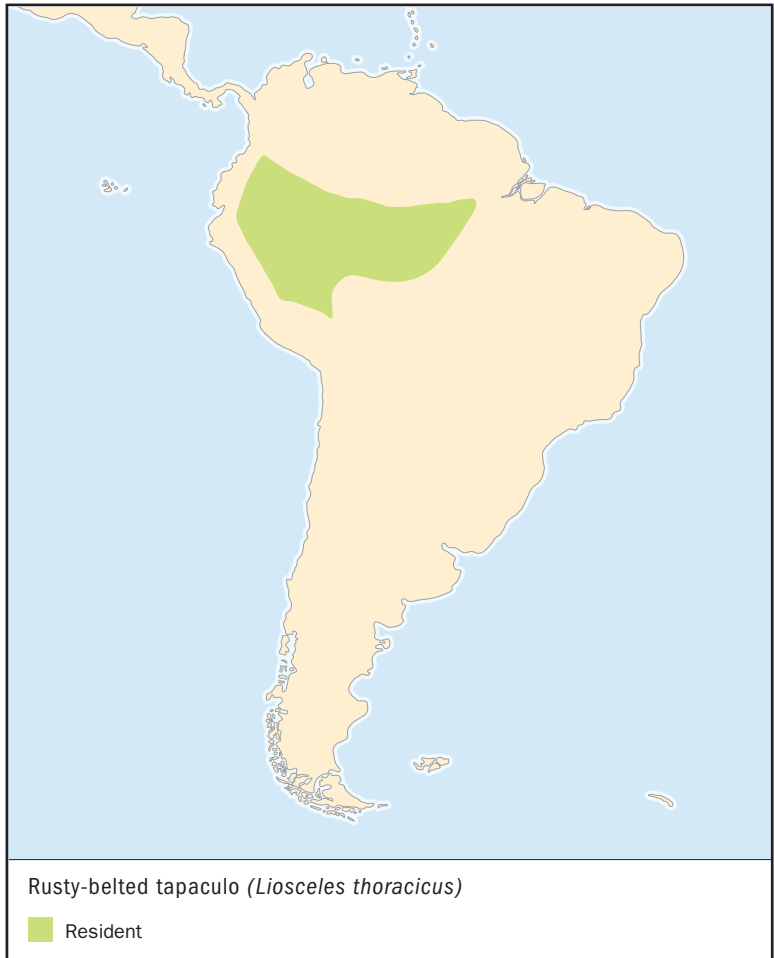
TAPACULOS AND PEOPLE

Because they are such shy birds, tapaculos are often overlooked by people who are not trained birdwatchers. They are mainly studied by ornithologists interested in the evolution of different families of birds.

CONSERVATION STATUS

Two species of tapaculos are Critically Endangered, facing an extremely high risk of extinction in the wild, and may be extinct. Streseman's bristlefront and the Bahai tapaculo both live in eastern Brazil and are in danger of dying out because of loss of habitat from deforestation of their naturally small range.

One other tapaculo, the tall-grass wetland tapaculo, that lives in the marshes of southern Brazil, is Endangered, facing a high risk of extinction, due to human development. The population of *Tacarcula* tapaculos is holding steady, but is considered Vulnerable, facing a high risk of extinction, because of clearing of forests and potential road building in its habitat along on the border of Panama and Colombia. Five other species are considered Near Threatened, in danger of becoming threatened with extinction, and face declining populations.



SPECIES ACCOUNT

RUSTY-BELTED TAPACULO *Liosceles thoracicus*

Physical characteristics: The rusty-belted tapaculo is one of the larger tapaculos. They are about 7.5 inches (19 centimeters) long and weigh about 1.5 ounces (42 grams). Rusty-belted tapaculos live on the forest floor. Their dark gray-brown back helps them blend in well with their environment. Their throat and breast are white, with a rusty reddish breast band that gives them their name. They have a black, white, and rusty pattern on their undersides.

Geographic range: Rusty-belted tapaculos live in South America in southeastern Colombia, western Brazil, and neighboring parts of Peru and Ecuador.

Habitat: Unlike many tapaculos that prefer higher, cooler elevations, rusty-belted tapaculos live in humid lowland rainforests on the forest floor.

Diet: Like all tapaculos, these birds eat insects. They feed by walking or hopping slowly along the forest floor looking for prey.

Behavior and reproduction: Rusty-belted tapaculos build underground nests among the roots of trees. Little is known about their reproductive behavior, because they are shy and difficult to observe.

Rusty-belted tapaculos and people: These birds have little interaction with people and are rarely seen. They are of interest mainly to ornithologists and birdwatchers.

Conservation status: Rusty-belted tapaculos are not threatened or in danger of extinction. ■

FOR MORE INFORMATION

Books:

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Web sites:

"Birds, Mammals, and Amphibians of Latin America." NatureServe. <http://www.natureserve.org/infonatura> (accessed on May 4, 2004).

Robertson, Don. "Bird Families of the World." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/index.html> (accessed on May 4, 2004).



Rusty-belted tapaculos live in humid lowland rainforests on the forest floor. (Illustration by Brian Cressman. Reproduced by permission.)

TYRANT FLYCATCHERS

Tyrannidae

Class: Aves

Order: Passeriformes

Family: Tyrannidae

Number of species: About 420
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

There are more species in the family of tyrant flycatchers than in any other family of birds in the Western Hemisphere. Members of this family are found throughout North, Central, and South America. The family includes both migratory species that move from one climate to another as the seasons change and non-migratory species that remain in the same area year round. Only about thirty-seven of the more than four hundred species of tyrant flycatchers live in North America.

Tyrant flycatchers are perching birds with bodies that range in size from 3.5 to 11 inches (9 to 28 centimeters) and weigh from about 0.2 to 2.4 ounces (5.7 to 68 grams). This family includes some species that look very different from each other and other species that look so similar they cannot be told apart just by looking at them. In addition, males and females of many species look alike. Most members of this family are dull with brown, gray, or olive-green backs and ivory or light gray undersides. There are exceptions to this color pattern, including the vermilion flycatcher and the great kiskadee, both of which are brightly colored. Most species have moderate-length tails, although a few, such as the scissor-tailed flycatcher, have pairs of 6 inch long (15 centimeter) tail feathers that stream out behind them, almost doubling the bird's length.

Despite the diversity found in this family, tyrant flycatchers do have certain characteristics in common. All these birds eat insects, and they have developed short, wide bills with a slight hook at the end that help them catch and hold their food. Stiff

stripped-down feathers consisting mainly of the feather shaft are found around the bill of most tyrant flycatchers. These are called rictal (RIK-tuhl) bristles. Originally it was thought that rictal bristles helped the birds catch insects while flying, but recent experimental evidence disproved this theory. Ornithologists, scientists who study birds, now think the bristles may help to keep insects out of the birds' eyes as they fly.

Tyrant flycatchers are good flyers. Those species that migrate have longer, more pointed wings designed for more efficient flight than those species that stay in one area year round. In non-migratory species the wings are shorter and rounder, a design that makes lifting off a branch easier. Because flycatchers spend little time on the ground, their feet and legs are weak.

GEOGRAPHIC RANGE

Tyrant flycatchers are found from the southernmost tip of South America to north of the Arctic Circle in North America. Species that summer in the Arctic usually migrate to Central or South America in the winter. The only area in the Western Hemisphere where tyrant flycatchers are not found is in the extreme northern edge of Canada.

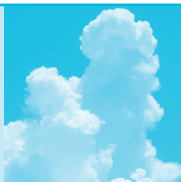
HABITAT

Tyrant flycatchers live wherever insects live. They have adapted to tropical rainforests and deserts of the southwestern United States. They can be found in all types of forests, along streams, in grasslands, deserts and around human-made structures. They are most likely to be found in areas where trees, posts, or other spots to perch are combined with open areas.

DIET

Tyrant flycatchers are insectivores, eating mainly insects. However, certain species also eat berries, fruit, caterpillars, and worms. Some of the larger species eat small fish, frogs, lizards, and even mice or small birds, in addition to insects. Flycatchers' bills are adapted to the type of food they eat. The larger the food, the larger and stronger the bill must be. Bigger birds may beat their food against a branch until it is dead, then hold it down with one foot while pulling it apart with their bill.

When hunting for food, most tyrant flycatchers sit on a perch above the ground and remain still until they see an insect. They then fly out and snap the insect out of the air. As their bill closes,



FIRST TO BE BANDED

The naturalist John James Audubon chose the eastern phoebe as the first bird to band, or tag, in the United States in 1840. He used information from these banded birds to find out where they migrated and whether they returned to the same places each year.

it makes clicking sound loud enough to be heard by human observers. The bird then returns either to the same or a different perch and waits for the next insect. This type of feeding is called hawking. Some tyrant flycatchers such as phoebes (FEE-beez) eat insects, caterpillars, and worms off the ground. These birds sit on a low perch until they see their prey, then fly down to the ground to pick it up, and return to a perch. They do not walk or hop along the ground hunting for food.

BEHAVIOR AND REPRODUCTION

Songs and calls are important in helping tyrant flycatchers recognize their own species, especially when several different members of this family live in the same area and look similar. Most species of tyrant flycatchers form pairs only for a single breeding season, choosing a different mate the next year. The female does most of the nest building, although the male sometimes keeps her company as she gathers material for the nest.

Tyrant flycatchers build many different types of nests in a variety of different locations. Many species build open cup-like nests in trees or shrubs. Some species nest in holes in trees, while others, such as phoebes, build nests of mud and plant material under bridges or under the eaves of empty buildings. Other species build bag-type nests that hang from branches over streams. Generally tyrant flycatchers select nest sites that offer some protection from predators and the weather.

Tyrant flycatchers lay two to eight eggs, and have one or two broods, or groups of young, a year. The female sits on the nest and incubates, sits on and warms, the eggs for about two weeks. The eggs hatch over several days, rather than all at the same time. Newborn tyrant flycatchers are almost naked and take two to three weeks to fledge, or develop feathers. During this time, both parents feed the young birds.

Tyrant flycatchers are territorial while they are breeding. They actively defend the area where they are nesting against other birds of the same or competing species and do their best to drive them away. Some tyrant flycatchers are very aggressive. The family gets the name tyrant from the behavior of kingbirds, which sometimes fearlessly attack larger birds.

Tyrant flycatchers that nest at the extreme edges of their range—either in the Arctic or near at the southern tip of South America—migrate hundreds of miles to warmer climates in order to find food when cold weather sets in. Other species that live in less extreme climates move much shorter distances or not at all. Migrating birds tend to return to the same nesting area each year.

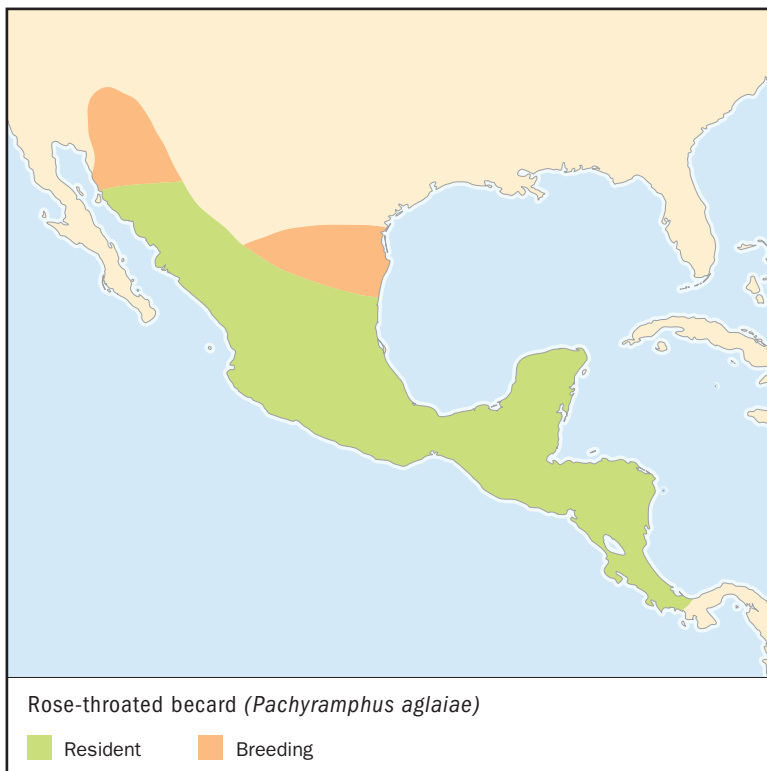
TYRANT FLYCATCHERS AND PEOPLE

Tyrant flycatchers are neither dangerous nor particularly useful to humans, although they do eat large numbers of insects and may help to control the insect population.

CONSERVATION STATUS

Two tyrant flycatchers found in Brazil, the Alagoas tyrannulet and the Minas Gerais tyrannulet are Critically Endangered, facing an extremely high risk of extinction in the wild, because of rapid habitat loss and small populations that are widely separated. Nine other members of the tyrant flycatcher family, eight in South America and one in Cuba, are Endangered, facing a very high risk of extinction, for similar reasons. Fifteen additional species, none of which are in North America, are Vulnerable, facing a high risk of extinction.

SPECIES ACCOUNTS



ROSE-THROATED BECARD *Pachyramphus aglaiae*

Physical characteristics: The rose-throated becard is one of the more colorful members of the tyrant flycatcher family. It is a moderate sized bird about 6.5 to 7.3 inches (16 to 19 centimeters) long with strong black bills. Males and females look different. Males have a dark gray head, gray back, light gray undersides, and a bright rose-colored throat patch. Females are dark brown on top and tan underneath with no rose color on them at all. Young birds have the same color pattern as adult females.

Geographic range: Rose-throated becards live year round from northern Mexico through Panama in southern Central America. During spring and summer breeding season, they can also be found in the United States in southeastern Arizona and the Rio Grande valley of Texas.

Habitat: Rose-throated becards live along the edge of forests, in wooded canyons and mountainous areas. They prefer places with tall trees, such as sycamores (SIK-ah-mohrz), near open areas.

Diet: Rose-throated becards eat insects, insect larvae (LAR-vee), and some berries. They hawk for food, sitting on a perch, then flying out to snap an insect out of the air.

Behavior and reproduction: Rose-throated becards choose a single mate and lay two to six eggs once each year. Female do most of the nest building. The nest is round and hangs from a tree branch. Females incubate the eggs for just over two weeks. Both parents feed the young, which leave the nest around three weeks after birth.

Rose-throated becards and people: Rose-throated becards are attractive to birdwatchers, but have little other known importance to people.

Conservation status: Large populations of rose-throated becards exist. They are not in immediate danger of extinction. ■



Female rose-throated becards do most of the nest building and incubate the eggs, but the males help feed the young. (Illustration by Wendy Baker. Reproduced by permission.)



GREAT KISKADEE

Pitangus sulphuratus

Physical characteristics: Great kiskadees, also called kiskadee flycatchers, are one of the larger, more colorful tyrant flycatchers. These birds are about 9.8 inches (25 centimeters) long. Males and females look the same. They have a black and white lined head, brown back and wings, white throat patch, and bright yellow undersides.

Geographic range: Great kiskadees are found in the United States in southwest Texas, and from northern Mexico through Central America, and in South America east of the Andes Mountains and as far south as Paraguay.



Great kiskadees dive into the water after food, which they bring to their perch and beat against a branch until it is dead before tearing it apart.

(Illustration by Wendy Baker. Reproduced by permission.)

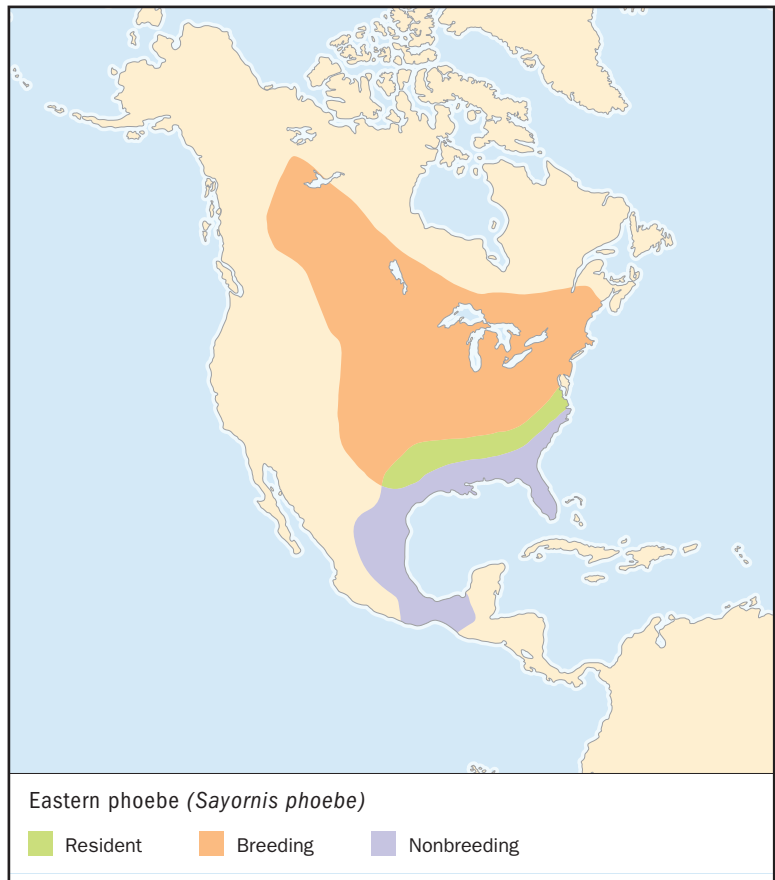
Habitat: Great kiskadees live in semi-open country with scattered trees. They are often found at the edge of forests and along streams.

Diet: Great kiskadees eat insects, but also will eat small fish, tadpoles, lizards, and mice. They will dive into the water after food, which they bring to their perch and beat against a branch until it is dead before tearing it apart. If they cannot find their preferred food, great kiskadees will eat fruits and berries.

Behavior and reproduction: Great kiskadees are aggressive and will chase larger birds out of their territory. These are large, active, noisy birds with a loud, harsh, call that sounds like their name. They mate with a single partner and build round nests on trees or utility poles. The female lays two to five eggs, two or three times a year. The young hatch in about two weeks and are fed by both parents before they fledge, grow feathers, and leave the nest about three weeks after birth.

Great kiskadees and people: Great kiskadees are often found around houses and gardens. They are common in many areas, but do not have a special significance to people.

Conservation status: Great kiskadees are abundant in much of their range, although their populations are declining in Texas due to development. They are in no danger of becoming extinct. ■



EASTERN PHOEBE

Sayornis phoebe

Physical characteristics: Eastern phoebes are about 7 inches (18 centimeter) long with gray-brown heads and backs, white undersides, and black bills, legs, and feet. Males and females look alike.

Geographic range: Eastern phoebes are found east of the Rocky Mountains in the United States and Canada. They are migratory birds, moving north to nest in the summer and south to winter in coastal South Carolina, Georgia, Florida, and along the Gulf of Mexico as far south as the Yucatán Peninsula in Mexico.

Habitat: Eastern phoebes live in open land along the edge of forests and along rivers and streams. They survive very well close to human-made structures such as bridges, roads, and farms.

Diet: Eastern phoebes hawk for insects. They will also eat small fish and berries.

Behavior and reproduction: Eastern phoebes mate two or three times a year, usually with the same partner. They build a cup-shaped nest out of mud attached to a vertical wall, such as a cliff, pole, or building.

Eastern phoebes and people: Eastern phoebes often live near human structures and take advantage of them as places to build nests. They eat large numbers of insects, but are not especially significant to people.

Conservation status: Eastern phoebes are common in many parts of their range and are in no immediate danger of extinction. ■

FOR MORE INFORMATION

Books:

Hilty, Steven L. *Birds of Venezuela*. Princeton, NJ: Princeton University Press, 2003.

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Sibley, David. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Web sites:

Deeble, B. "Rose-Throated Becard." The Nature Conservancy. <http://www.conserveonline.org/2001/05/m/en/rtbe.doc> (accessed on May 4, 2004).

Robertson, Don. "Bird Families of the World." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/index.html> (accessed on May 4, 2004).

SHARPBILL

Oxyruncidae

Class: Aves

Order: Passeriformes

Family: Oxyruncidae

One species: Sharpbill (*Oxyruncus cristatus*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Sharpbills are small, sturdy, quiet birds 6 to 7 inches (15 to 18 centimeters) in length that live in scattered areas of South America. Sharpbills have olive green backs, black wings, and black tails. Their undersides are ivory with distinctive dark tear-shaped spots on the upper part of the breast. In the center of the head is a bright orange or red crest that is normally hidden, but is raised when the bird is excited. Males and females look similar, although the colors of the female may be duller. Some ornithologists, scientists that study birds, separate this species into five different groups based on their geographic location and small differences in color and size. However, these differences are minor.

Sharpbills get their name from the distinctive shape of their gray bill, which is sharply pointed. The bill is surrounded by rictal (RIK-tuhl) bristles, stiff stripped-down feathers consisting mainly of the feather shaft. Originally it was thought that rictal bristles helped the birds catch insects while flying, but experimental evidence disproved this theory. Ornithologists (scientists who study birds) now think the bristles may help to keep insects out of the birds' eyes as they fly.

Ornithologists have not decided exactly where sharpbills belong in the classification of bird families. Sharpbills were first scientifically described in 1820 and were put in their own family, which contains only this species. Since then, they have been reclassified by some ornithologists as contingas or as tyrant flycatchers. Genetic research started in the 1980s seemed

to suggest that they could be part of the tyrant flycatcher family, but as recently as 2002, there was no firm conclusion about how they should be classified.

GEOGRAPHIC RANGE

The range of the sharpbill is unusual, because it is discontinuous, or broken. Sharpbills are found in isolated patches throughout Central and South America. They live year round in parts of Costa Rica and Panama, Argentina, Bolivia, Brazil, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, and Venezuela. The broken up nature of their range suggests that at one time they may have been found over a much greater, continuous area.

HABITAT

Sharpbills live and breed in humid mountain rainforests at elevations of 1,300 to 5,900 feet (400 to 1,800 meters) above sea level. They are found in both dense forest and along the forest edges. Although they do not migrate, or move seasonally to find food, in the traditional sense, some scientists have reported that they do move down the mountain toward lowland rainforests when they are not breeding.

DIET

Sharpbills eat mainly fruit, insects, and insect eggs. They get their name from their pointed bill that allows them to hunt for food using what is called “pry and gape” behavior. When a sharpbill is feeding, it often hangs upside down on a branch and uses its pointed bill to pry into fruit, tightly rolled leaves, or moss growing on the tree. It then forces its bill apart (gapes) and collects seeds or insects from inside the fruit, leaves, or moss. This type of feeding behavior is uncommon. It is an example of a physical trait, the bill, and a behavioral trait, the feeding technique, evolving, changing over time, together to give the bird an advantage over competing species.



WHAT IS A TAXONOMIST?

A taxonomist is a scientist who studies the orderly classification of plants and animals. Taxonomists first look to see if two groups of plants or animals can interbreed, produce living offspring. This is the main way to define separate species. Taxonomists also look at the physical and behavioral characteristics a species shares with other species in determining their genus (JEE-nus), the first grouping above individual species, and the family, a grouping of genera (JEN-uh-rah; plural of genus). Today, taxonomists use biochemical and genetic tests to determine the relationship among species, genera, and families. Single species like sharpbills that do not seem to be closely related to any other species provide a challenge for taxonomists. Often they are reclassified several times as more information becomes available.



BEHAVIOR AND REPRODUCTION

Sharpbills are quiet birds that tend to stay still, making only short flights between perches. Their coloring allows them to blend in well with the environment, making them hard to observe. They live alone, rather than in flocks.

Although sharpbills were first described in 1820, the first sharpbill nest was not found until 1980, so not much is known about the mating and nesting behavior of these birds. It is believed that sharpbills mate from late February to May. The nest that was found in 1980 contained two eggs and was a shallow cup located near the top of tree about 100 feet (30 meters) tall, making observations difficult for scientists. Much remains to be learned about the behavior of these birds.

SHARPBILLS AND PEOPLE

Sharpbills are of interest mainly to ornithologists and bird-watchers.



To feed, the sharpbill forces its pointed bill into fruit, tightly rolled leaves, or moss growing on a tree. It then forces its bill apart and collects seeds or insects from inside the fruit, leaves, or moss. (Illustration by Bruce Worden. Reproduced by permission.)

CONSERVATION STATUS

Not enough is known about these birds to determine their conservation status. However, the broken up nature of their range suggests that they once were found in a wider area than they are today.

FOR MORE INFORMATION

Books:

Hilty, Steven L. *Birds of Venezuela*. Princeton, NJ: Princeton University Press, 2003.

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol. 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Periodicals:

Brooke, M., D. Scott, and D. Teixeira. "Some Observations Made at the First Recorded Nest of the Sharpbill *Oxyruncus cristatus*." *Ibis* (1983): 259–261.

Web sites:

"Birds Mammals and Amphibians of Latin America." NatureServe. <http://www.natureserve.org/infonatura> (accessed on May 4, 2004).

MANAKINS

Pipridae

Class: Aves

Order: Passeriformes

Family: Pipridae

Number of species: 54 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Manakins are some of the most brightly colored, energetic, attractive birds of the Western Hemisphere. They are generally small, around the size of hummingbirds. Most are less than 5 inches (13 centimeters) long and weigh only 0.35 to 0.70 ounces (10 to 20 grams). Manakins live up to fifteen years, an unusually long life for birds this small.

Female and young manakins of both sexes tend to be olive-green or black. Males, however, have intense jewel-like colors, with white, red, blue, or yellow areas on the top of the head, neck, and across the back, depending on the particular species. Young males go through several molts, or sets of feathers, before they achieve the full color of adults. In some species the males have long tail feathers that almost double the length of their body. Others have modified wing feathers that can be used by the males to make whirring or snapping sounds as part of their courtship and mating rituals.

GEOGRAPHIC RANGE

Manakins are found continuously from Mexico to Argentina and on the Caribbean islands of Trinidad and Tobago. Manakins live year round in the same location. They do not migrate, or relocate seasonally.

HABITAT

Manakins prefer the understory, which is the part of the forest midway between the forest floor and the tops of the trees.

They live in thick, subtropical woodlands and lowland tropical rainforests.

DIET

Manakins eat fruits and berries. They also eat insects that they snap out of the air during quick, short flights.

BEHAVIOR AND REPRODUCTION

Manakins do not form bonded pairs when they mate, nor do the males stay with the female after mating to help build a nest or raise the young. The dominant, or strongest and most attractive, male mates with many females during the breeding season. Younger, less attractive males may not mate at all.

Manakins are best known for their spectacular courtship rituals. When a male wants to attract a female, he removes the leaves and twigs on the ground in a small area, often about 3 square feet (1 square meter). This area is called the lek or lek court. In some species, males clear areas next to each other, creating very large lek courts.

In most species of manakin, two unrelated males form a lek partnership where they sing and dance in a complex, coordinated pattern unique to their species. This activity is called lekking. Females come to the lek to watch and choose a mate. They may visit many lek courts and watch many displays before mating. Often male lek partnerships last for years. One bird is definitely dominant and gets to mate with the majority of females. The other bird is a sort of apprentice, apparently learning from the dominant male and perfecting his own display.

Lekking can go on for quite a while and requires a lot of energy. Some species of manakin have modified feathers that they use to make snapping or whirring noises while making short flights during lekking. Others do their coordinated song and dance full of hops and flutters along horizontal branches. In the end, the female makes her decision, and flies away to mate with the chosen male.

Females build a nest of grass, usually over water. They lay one or two eggs and incubate (keep warm for hatching) them for seventeen to twenty-one days. The chicks fledge, grow their flying feathers, in thirteen to fifteen days.

MANAKINS AND PEOPLE

Both their beauty and their behavior make manakins attractive to birdwatchers and ecotourists who want to observe the natural world while leaving it as undisturbed as possible. In this way, manakins may have an indirect economic impact on tourism in some countries. In addition, the colorful males are often printed on souvenirs such as T-shirts and are represented on the postage stamps of several countries.

CONSERVATION STATUS

As of 2003, the Araripe manakin of Brazil was considered Critically Endangered, facing a extremely high risk of extinction in the wild. This manakin has been found only in one location, and its small population is under pressure from human development. Wied's tyrant-manakin, also found in Brazil, is Endangered, facing a very high risk of extinction. Two other Brazilian species are considered Vulnerable, facing a high risk of extinction.



LONG-TAILED MANAKIN

Chiroxiphia linearis

SPECIES ACCOUNTS

Physical characteristics: The female and male long-tailed manakin look very different. Females are about 5.5 inches (14 centimeters) in length, while males are 8.5 to 10.5 inches (21 to 27 centimeters) long. The difference in length is due to the male's much longer central tail feathers. Females are olive green with orange legs and feet. Males are black with a blue back and red crest on the head. Young males do not develop full adult coloration until they are four years old.

Geographic range: Long-tailed manakins are found in the western part of southern Mexico, and along the western edge of Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica.

Habitat: Long-tailed manakins live in thick, dense forests, along forest borders, and along the edge of mangrove swamps.



Two or three male long-tailed manakins often make their displays for females together at a lek. The dominant male mates with the females, and the other males work on perfecting their displays. (Kenneth W. Fink/Bruce Coleman Inc. Reproduced by permission.)

Diet: Like other manakins, these birds eat berries and insects.

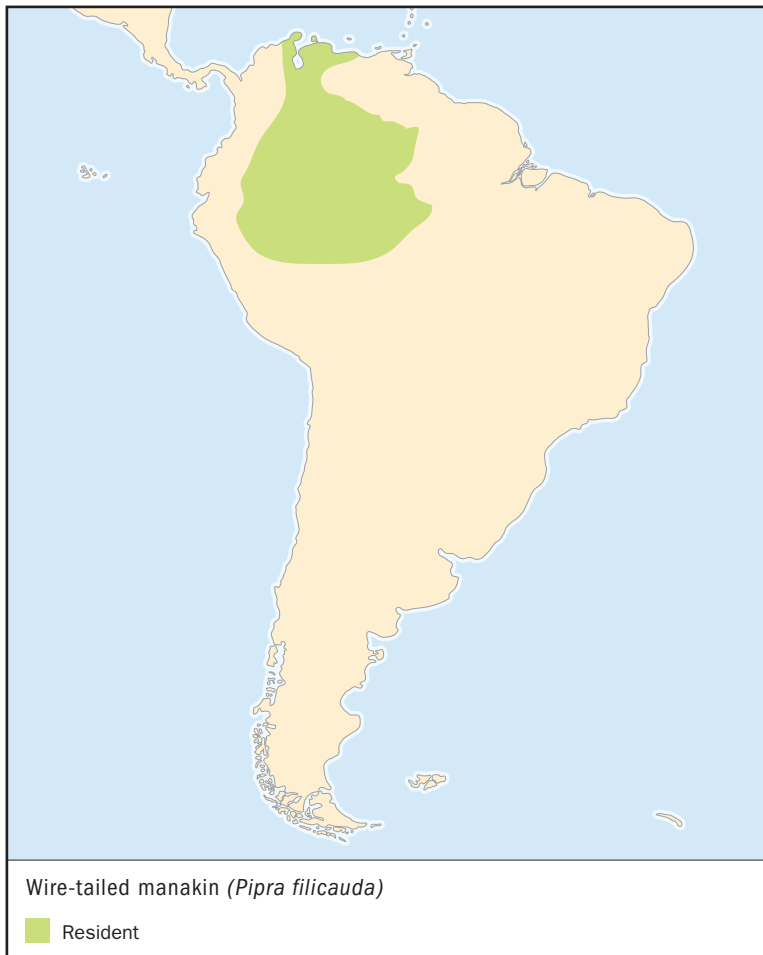
Behavior and reproduction: Long-tailed manakins put on one of the more spectacular displays of lekking. A pair, or occasionally three males, do a coordinated dance in which the birds sit on a horizontal branch. One jumps and hovers above the branch. When he lands, the other bird jumps and hovers. This dance is accompanied by a song, with each bird singing a distinct part. One male is dominant, and almost always gets to mate with the female.

Scientists have wondered why the non-dominant male participates in this time and energy consuming courtship ritual when he does not get to mate, despite all the effort he has put out. They have concluded that pairs of male long-tailed manakins stay together in a loose relationship for up to ten years. The non-dominant

male practices his singing and dancing and waits for the dominant male to die or leave the lek. He then becomes the dominant male, mating with the females and taking on an apprentice of his own. This pattern is made possible because these birds live for up to fifteen years.

Long-tailed manakins and people: Long-tailed manakins are one of the better-studied species in this family. Scientists have recorded the courtship behavior of this bird in detail. These birds may have an indirect positive impact on the local economy by attracting bird-watchers and ecotourists to the region.

Conservation status: Long-tailed manakins are common in the locations where they live. They are not in danger of extinction. ■



WIRE-TAILED MANAKIN

Pipra filicauda

Physical characteristics: Wire-tailed manakins are about 4.5 inches (11 centimeters) long. The females are dull olive-colored birds, but the males are brilliantly colored. Males have red from the top of their head through their upper back, a black back, bright yellow undersides, and long, thin tail feathers.

Geographic range: These birds are found in northeastern Peru, southeastern Colombia, eastern Ecuador, and in the rainforests of Venezuela and Brazil.

Habitat: Wire-tailed manakins prefer the edges of humid, tropical forests, forest clearings, and the edges of agricultural land.

Diet: Wire-tailed manakins eat berries and fruit. They hunt for food near the top part of the forest close to the canopy.

Behavior and reproduction: Wire-tailed manakins do not clear a lek space on the ground. Instead, they create perches about 4 to 6 feet (1.2 to 1.8 meters) above the ground in the understory. Each male may have several of these display perches. Although they have a distinctive call, wire-tailed manakins are mostly silent while they are lekking. Their courtship ritual consists of short flights, swoops, and jumps along a branch. They also lift the feathers of their lower back like a fan.

Wire-tailed manakins and people: Wire-tailed manakins are quieter and less noticeable than some of the other members of this family. They are of interest mainly to serious birdwatchers and ecotourists.

Conservation status: Wire-tailed manakins are not threatened. ■

FOR MORE INFORMATION

Books:

Hilty, Steven L. *Birds of Venezuela*. Princeton, NJ: Princeton University Press, 2003.

Kircher, John. *A Neotropical Companion: An Introduction to the Animals, Plants, and Ecosystems of the New World Tropics*, 2nd ed. Princeton, NJ: Princeton University Press, 1999.

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Sibley, David. *The Sibley Guide to Bird Life and Behavior*. New York: Alfred A. Knopf, 2001.

Periodicals:

McDonald, David B., and Wayne K. Potts. "Cooperative Display and Relatedness Among Males in a Lek-Mating Bird." *Science* (November 11, 1995): 1030–1033.

"The Buddy System." *Discover* (April 1995): 18–19.

Web sites:

Robertson, Don. "Bird Families of the World." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/index.html> (accessed on May 4, 2004).

"Manakins and the Plant Family Melastomataceae." Ecology Online. <http://www.ecology.info/manakins-melastomataceae.htm> (accessed on May 4, 2004).

COTINGAS

Cotingidae

Class: Aves

Order: Passeriformes

Family: Cotingidae

Number of species: 61 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Cotingas are a family of brightly colored Central and South American birds that are so closely related to tyrant flycatchers that there has been some disagreement about which family some of the species belong to. Cotingas are also related to the manakin family.

Members of the cotinga family vary greatly in size and physical appearance. They range from tiny, 3-inch (8-centimeter) birds to 20-inch (50-centimeter) birds the size of crows. In the smaller species, the females tend to be larger and heavier than the male birds, but in the larger species, the females are smaller than the males. Males and females usually look different. The males are more colorful than the females.

Male cotingas tend to be brightly colored with shiny, jewel-like feathers of red, orange, blue, green, and purple, depending on the species. These birds are some of the most attractive, colorful birds in the world. In addition to their brilliant feathers, many species of cotinga have evolved odd decorative features, probably important in attracting a mate. These include oversized head crests, inflatable throat sacs, and wattles, which are extra flaps of skin and feathers that hang from the neck.

Cotingas are also known for their voices, which can be quite loud. For example, the call of the screaming piha, sometimes called the “voice of the Amazon,” sounds like a loud wolf whistle. It can be heard for more than half a mile (1 kilometer). Bell-birds, another group of cotingas, make a distinctive ringing sound as if someone had hit a metal bell. These are some of the loudest

of any birdcalls. Although cotingas can be loud, they are often shy and difficult to see. Species that are brightly colored tend to have quieter calls than those that have duller, darker feathers.

GEOGRAPHIC RANGE

Cotingas live in southern Mexico, almost all of Central America, and in South America as far south as Argentina. The greatest number of species live in the Amazon River basin of Brazil and the Orinoco River basin of Venezuela.

HABITAT

Most cotingas prefer lowland tropical rainforests where they live in the middle and upper levels of the forest. Some of the larger species prefer living along rivers and streams. Only a few species live in mountainous areas at higher elevations.

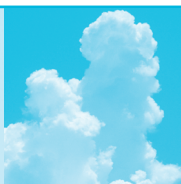
DIET

Cotingas have evolved large mouths that can open wide in order to eat fruit and other berries. Smaller species eat fruits almost exclusively. Larger species also eat insects, especially when fruits are less available. The seeds inside many fruits pass unharmed through the digestive system of the birds. Smaller seeds are eliminated. Larger seeds are regurgitated (re-GER-jih-tate-ud), vomited. The birds help to spread the seeds over a large area, increasing the range and diversity of plants in the areas where they live.

BEHAVIOR AND REPRODUCTION

Some species of cotinga, especially those of medium size, participate in spectacular courtship rituals, behaviors that lead to mating. When a male wants to attract a female, he removes the leaves and twigs on the ground in a small area. This area is called the lek or lek court. Several males will then go to these areas and sing, call, and dance by hopping, making short flights, and fanning or making noise with their feathers. This activity is called lekking. Some species lek on branches above the ground rather than on the forest floor.

Females are attracted to the lek by the calls or wing sounds the males make. They watch the display, and then choose a mate. Once the female makes her choice, she flies away with the chosen male. The male will mate with as many females as possible during the breeding season. He does not stay with the female and rarely helps with building a nest. Females incubate,



WHERE'S THAT COW?

Cotingas have some of the loudest voices in the bird world. The calfbird, also called the capuchinbird, gives a cry that sounds like the mooing of a young cow. It uses special air sacs to amplify the sound and make carry over a longer distance.

sit on and warm, the eggs and raise the young alone. Not every species of cotinga leks. Some use fancy flying maneuvers (mah-NOO-verz) to attract mates, while others display their interest in mating individually rather than in groups.

Cotingas build a variety of different types of nests ranging from heaps of twigs in the fork of a tree to shallow woven cups. Generally birds in this family lay a single egg that hatches after about a month. The chicks are born blind and without feathers. The mother feeds the chicks for about a month until they mature enough to leave the nest.

Cotingas tend to be non-aggressive, passive, with their own and other bird species except when nesting. They do not protect a particular territory, and they often feed in the same tree as other birds.

COTINGAS AND PEOPLE

Because of their bright, beautiful colors, cotingas have been hunted for their feathers, which are used as ornaments by native people. They may also be hunted for food. The feathers of some species are used in making fishing flies, lures for fish. The beauty of these birds draws birdwatchers and ecotourists, travel for the purpose of studying wildlife and the environment, from around the world, and may add indirectly to the local tourist economy.

CONSERVATION STATUS

The kinglet calyptura, also called the kinglet cotinga, is Critically Endangered, facing an extremely high risk of extinction in the wild. It lives in only one place in Brazil and its population is tiny. This bird had not been seen in over one hundred years and was thought to be extinct until it was re-discovered in 1996.

Four other species of Brazilian cotinga, the white-winged cotinga, the yellow-billed cotinga, the banded cotinga, and the buff-throated purpletuft are all Endangered, facing a very high risk of extinction in the wild. Ten other species are considered Vulnerable, facing a high risk of extinction. The population of these birds is declining rapidly because their habitat is being destroyed, and their small populations are being fragmented, separated.



SPANGLED COTINGA

Cotinga cayana

SPECIES ACCOUNTS

Physical characteristics: Spangled cotingas are 8.5-inch (22-centimeter) long birds that live in the rainforest. The males are brightly colored. Their backs are brilliant turquoise blue spattered with black. They have black wings, a black tail, and a large purple patch under their throat. The females are dull, with dark brown backs and light brown, spotted breasts.

Geographic range: Spangled cotingas are found in the Amazon River basin of Brazil, the rainforest of Venezuela, French Guiana, Guyana, eastern Colombia, and northwestern Bolivia.



Spangled cotingas prefer fruit and berries, and often search for food in the same trees as other members of the cotinga family. (Illustration by Emily Damstra. Reproduced by permission.)

Habitat: Spangled cotingas live in the canopy under the treetops of lowland rainforests, rarely above 2,000 feet (600 meters) in elevation.

Diet: Like all cotingas, these birds prefer fruit and berries. They often search for food in the same trees as other members of the cotinga family.

Behavior and reproduction: Not much is known about the mating behavior of spangled cotingas, however, it is believed that they form loose leks during the mating season. During courtship, males often spread themselves flat along a branch, moving their wings and calling to females. Females build loose platform nests of sticks in the tops of trees and care for the young alone.

Spangled cotingas and people: These birds are hunted for their feathers, which are used in making flies for fishing and as decoration by native tribes.

Conservation status: The spangled cotinga is not currently threatened with extinction. ■



AMAZONIAN UMBRELLABIRD

Cephalopterus ornatus

Physical characteristics: Amazonian umbrellabirds are black birds with a whitish eye and strong black claws. They are about the size of a crow, 18 inches (46 centimeters) in length. Their most impressive physical feature is the tall crest of hair-like feathers with white shafts that stands up over its head like an umbrella. In fact, the bird's Latin scientific name roughly means "fancy head." This bird also has a long wattle of feathers that hangs down from its throat to its belly. Amazonian umbrellabirds are known for their loud, carrying voice.



The Amazonian umbrellabird has a tall crest of hair-like feathers with white shafts that stands up over its head like an umbrella. (Illustration by Emily Damstra. Reproduced by permission.)

Geographic range: Amazonian umbrellabirds are found in the Amazon river basin of Brazil and Venezuela, northwest Bolivia, and eastern Colombia.

Habitat: This species prefers to live along rivers. However, near the edge of the Andes mountains, it lives in the forest at elevations up to 4,300 feet (1,300 meters).

Diet: Umbrellabirds primarily eat fruit and berries, but will eat insects, spiders, and insect larvae when fruit is not available.

Behavior and reproduction: Amazonian umbrellabirds are slow-flying birds that spend a lot of time sitting still on branches. During mating season, males form leks spread far apart. The female builds a loose nest of twigs high in a tree and raises a single chick.

Amazonian umbrellabirds and people: These birds are heard more often than they are seen. They are mainly of interest to birdwatchers.

Conservation status: Amazonian umbrellabirds are not threatened or at risk of becoming extinct at any time in the foreseeable future. ■



GUIANAN COCK-OF-THE-ROCK

Rupicola rupicola

Physical characteristics: Male Guianan cocks-of-the-rock are bright orange birds with large orange crests on their heads. They have black and white wing bars and black on their tails. Females are a drab brown color.

Geographic range: Guianan cocks-of-the-rock are found in southern Guyana, Colombia, Venezuela and in northern Brazil.

Habitat: Guiana cocks-of-the-rock live in lowland forests below 4,900 feet (1,500 meters).



Male Guianan cocks-of-the-rock have a large orange crest on their heads. Females are a drab brown color. (Illustration by Emily Damstra. Reproduced by permission.)

Diet: Cocks-of-the-rock prefer fruit and berries, but will eat insects if other food is scarce.

Behavior and reproduction: Male cocks-of-the-rock clear spots on the forest floor to form large leks where they sing loudly and perform mating dances for females. Predators such as hawks, jaguars, ocelots, and boa constrictors are attracted to these leks. Successful males will mate with many females during the breeding season. Females raise their young alone, building cup-shaped nests of clay and plants along rock faces or in holes on cliffs. They lay two eggs that hatch in about a month.

Guianan cocks-of-the-rock and people: In the early twentieth century, hunters captured these birds and sold them as pets. Today they are attractive to birdwatchers and ecotourists who want to observe nature without disturbing it. In this way they may add to the local tourist economy. Native tribes hunt these birds for their feathers and as food. Fly fishermen use their feathers in making fishing flies.

Conservation status: Guianan cocks-of-the-rock are not threatened or at risk of extinction. ■

FOR MORE INFORMATION

Books:

Hilty, Steven L. *Birds of Venezuela*. Princeton, NJ: Princeton University Press, 2003.

Kircher, John. *A Neotropical Companion: An Introduction to the Animals, Plants, and Ecosystems of the New World Tropics*, 2nd ed. Princeton, NJ: Princeton University Press, 1999.

Ridgley, Robert S., and Guy Tudor. *The Birds of South America*. Vol 2, *The Suboscine Passerines*. Austin, TX: University of Texas Press, 1994.

Web sites:

"Cotingas, Bellbirds, Becards, Cock-of-the-rock." Cornell University. <http://www.eeb.cornell.edu/winkler/botw/families.htm> (accessed on May 4, 2004).

"Ecology of the Cock-of-the-Rock." Ecology Online. <http://www.ecology.info/cock-of-the-rock.htm> (accessed on May 4, 2004).

family CHAPTER

PLANTCUTTERS

Phytotomidae

Class: Aves

Order: Passeriformes

Family: Phytotomidae

Number of species: 3 species

PHYSICAL CHARACTERISTICS

Adult plantcutters are generally between 7 and 8 inches (18 and 20 centimeters) long, and have short, thick, cone-shaped bills. Their bodies are stocky, although they weigh only 1.5 ounces (40 grams). The birds' wings and legs tend to be short, although plantcutters have long tails and strong, large feet. In the males and females of the Peruvian and red-breasted species, the head peaks in a short crest. The rufous-tailed plantcutter is similar looking, but lacks a crest and has more red in its tail.

Male plantcutters are more brightly colored than the females, and show off their cinnamon or rusty breasts and bellies and distinctive black eye stripes at mating time. Neither sex is particularly colorful, however, blending into their dry environment with ashy gray (male) and buff-brown (female) backs. Both sexes have white bars on their wings and tail ends and either yellow or crimson irises.

These birds are locally known in South America as *cotarramas*, *cortapuntas*, and *raras* ("rare ones"). Their name derives from the highly unusual rows of sharp, forward-leaning, tooth-like projections on the edges of their bills on both sides. Made of keratin (KARE-ah-tin), like the bill itself, these projections allow the birds to pulverize and eat the leafy foods on which they feed.

GEOGRAPHIC RANGE

The Peruvian plantcutter lives only in the dry forest and scrublands of Peru's northwest coasts. The rufous-tailed and red-breasted plantcutters occupy a larger area, and may be

phylum

class

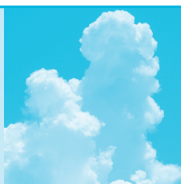
subclass

order

monotypic order

suborder

▲ family



A FAMILY NAME

Bird scientists have long debated exactly where the plantcutter belongs in the classification of all organisms. Some experts insist that the bird represents a distinct genus within the cotinga family, while others believe it forms a genus in a cotinga subfamily within the tyrant flycatcher family. Ongoing ornithological, bird science, studies hope to bring a definitive answer to the question soon.

found in Argentina's southern temperate zone and Chile, and north to subtropical Bolivia and Paraguay.

HABITAT

The Peruvian plantcutter lives exclusively in the dry forests of Peru's northwest coast, whereas the rufous-tailed and red-breasted varieties live mainly in open farmland, grassland, open forest, and scrubland.

DIET

All three species of plantcutter are herbivores (plant eaters), eating leaves of the plants and trees found in their habitats. They also eat fruit on occasion, and since humans have occupied their territories have developed a fondness for grape and cereal-crop leaves.

Unlike other species of herbivorous birds, of which there are only a few, the plantcutter has not evolved a complex digestive system to process its tough, fibrous food. They use the tooth-like ridges on the edges of their beaks to chew their food into a pulp, which allows their digestive tracts to absorb the nutritious interiors of the plants' cells.

The plantcutter species has extremely efficient intestines that can process large amounts of vegetation in a relatively short time. This adaptation lets the birds maintain a high metabolic level, and thus a high energy and activity level.

BEHAVIOR AND REPRODUCTION

Unlike the majority of vegetarian birds, whose biology demands that they conserve energy to compensate for their low-calorie diet, plantcutters are energetic and lively. They patrol their territories throughout the day, looking for new food sources and invaders.

The reproductive life of the plantcutter species remains something of a mystery to ornithologists, although we know that the females lay two to four eggs in a loosely constructed nest.

PLANTCUTTERS AND PEOPLE

South American farmers and vintners (grape growers) often complain about plantcutter raids on their grape and cereal

crops. However, tourist revenue from avid birdwatchers hoping for a glimpse of the rare Peruvian plantcutter helps to offset any animosity.

CONSERVATION STATUS

While the red-breasted and rufous-tailed plantcutters vigorously occupy a large area of South America, the Peruvian plantcutter is one of the most Endangered birds in the world, facing a very high risk of extinction, because of the rapid destruction of its small habitat for grazing, mining, and agriculture.

SPECIES ACCOUNTS



PERUVIAN PLANTCUTTER *Phytotoma raimondii*

Physical characteristics: Adult Peruvian plantcutters are 7 to 8 inches (18 to 20 centimeters) in length and weigh approximately 1.5 ounces (40 grams). Both males and females have bright yellow eyes and a short crest, but the male is more colorful, with red patches on his lower breast and forehead. The birds' short wings make them agile fliers, and their strong feet allow them to grasp their leafy food tightly as they shred it with their tough, ridged beaks.

Geographic range: The Peruvian plantcutter lives only in coastal northwestern Peru, from the city of Tumbes south to the capital, Lima.

Habitat: Adapted to the dry environment known as the Tumbesian ecosystem, the Peruvian plantcutter prefers desert scrub, low woodlands (both open and dense), and occasionally thickets near or next to rivers. Its habitat is always populated with caper shrubs, acacia (uh-KAY-shah) trees, the *Prosopis* tree, and climbing vines in the cucumber family. The Peruvian plantcutter is notoriously sensitive to any changes in its environment, including noise, light, and contamination.

Diet: Although it eats occasional bits of fruit, the Peruvian plantcutter gets most of its nutrition from the leaves and buds of the *Prosopis* tree and various shrubs. In terms of diet, the bird has adapted to its dry environment by extracting most of its water from the foliage it eats.

Behavior and reproduction: The Peruvian species of plantcutter is a high-energy and active bird, patrolling its territory during the day to flush out interlopers and find new sources of food. Its throbbing, sad song has prompted locals to nickname it the “toothache bird.”

Scientists know very little about the reproductive habits of the bird. However, field biologists have observed that they build loose nests and that the females lay between two and four eggs. The eggs are a mottled brown color to help camouflage (KAM-uh-flaj; hide) them from predators, animals that hunt them for food. The females incubate the eggs, keep them warm, by sitting on them for an unknown period of time.

Peruvian plantcutters and people: The Peruvian plantcutter has become a rallying symbol for Peru’s emerging conservation movement. Champions of the bird have been fighting to save the estimated 500 to 1,000 remaining birds by educating the public and trying to block agricultural interests from developing the plantcutter’s last population stronghold near Talara.

Conservation status: There are only four recent records of sightings of this bird, leading to its classification by the World Conservation Union (IUCN) as Endangered. The Peruvian plantcutter is extremely choosy about its habitat. The species has failed to colonize some apparently suitable territory, which has puzzled experts.

A nongovernment conservation group called ProAvesPeru is the leader in the effort to save the Peruvian plantcutter. Sponsored and



*The Peruvian plantcutter gets most of its nutrition from the leaves and buds of the *Prosopis* tree and various shrubs. The bird has adapted to its dry environment by extracting most of its water from the foliage it eats. (Illustration by Michelle Meneghini. Reproduced by permission.)*

supported by the Audubon Society of Latin America, ProAvesPeru's main goal is to establish the Talara Reserve. Another ally of the plant-cutter is Gunnar Engblom, a Swedish ornithologist who in 1999 conducted the first ecological study of the bird's habitat.

The main threats to Peruvian plantcutters are gold mining, animal grazing, illegal logging for firewood, and the installation of new crops such as sugar cane.

FOR MORE INFORMATION

Books:

Feduccia, Alan. *The Origin and Evolution of Birds*. New Haven, CT: Yale University Press, 1999.

Sibley, C. G., and B. L. Monroe. *Distribution and Taxonomy of Birds of the World*. New Haven, CT: Yale University Press, 1990.

Skutch, Alexander F. *Life Histories of Central American Birds*. Vol. 3. Berkeley, CA: Cooper Ornithological Society, 1969.

Periodicals:

Lopez-Calleja, M. V., and F. Bozinovic. "Energetics and Nutritional Ecology of Small Herbivorous Birds." *Revista Chilena de Historia Natural* 73 (September 2000): 411–420.

Prum, R. O., et al. "A Preliminary Phylogenetic Hypothesis for the Cotingas (Cotingidae) Based on Mitochondrial DNA." *Auk* 117 (2000).

Web sites:

"Birder's Exchange Recipients." American Birding Association. <http://www.americanbirding.org/programs/consbexr3.htm> (accessed on April 27, 2004).

"Tambogrande Referendum Has Domino Effect in Peru." Americas Program. http://www.americaspolicy.org/citizen-action/focus/0207/tambogrande_body.html (accessed on April 27, 2004).

"Conservation of the Critically Endangered Peruvian Plantcutter in Talara Province, NW Peru." Audubon Latin America. <http://www.audubon.org/local/latin/bulletin6/initiatives.html> (accessed on April 27, 2004).

"Birdlife Species Factsheet (extended): Peruvian Plantcutter (*Phytotoma raimondii*)." Birdlife International. <http://www.birdlife.net> (accessed on April 27, 2004).

"Conservation of the Threatened Peruvian Plantcutter." Communications for a Sustainable Future. <http://csf.colorado.edu/mail/elan/jan99/0053.html> (accessed on April 27, 2004).

“Phytotomidae.” Cornell University, Department of Ecology and Evolutionary Biology. <http://www.eeb.cornell.edu/winkler/botw/phytotomidae.html> (accessed on April 27, 2004).

“Phytotomidae: Plantcutters.” John Penhallurick’s Bird Data Project. <http://www.worldbirdinfo.net> (accessed on April 27, 2004).

LYREBIRDS

Menuridae

Class: Aves

Order: Passeriformes

Family: Menuridae

Number of species: 2 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The male superb lyrebird is one of the world's more spectacular examples of birdlife, with his majestic tail of sixteen fanned, silver feathers that resembles the ancient Greek instrument called a lyre. The bird is dark brown on the top of its body, light brown below, and rufous (reddish) on its throat. The female of the species is smaller and has similar coloring, with a broadly webbed, reddish tail.

The male Albert's lyrebird is less colorful and smaller than the superb species. It possesses the same dramatic fanned tail, but without the outer lyre-shaped feathers. Both sexes are a rich chestnut color.

Adult lyrebirds range from 33 to 38.5 inches (84 to 98 centimeters)—about the size of a rooster—making them one of the biggest passerines (PASS-ur-eenz), perching birds. Male and female lyrebirds have small heads, long legs, tails, and necks, and large feet with powerful claws. Because of their weak, short wings, they seldom fly. Lyrebirds have short, sharp, slightly down-turned bills that they use for picking prey out of leaf litter.

Although they have their own species-specific songs, lyrebirds are natural mimics, much like the American mockingbird. They can copy almost any clear, loud sound, such as chainsaws, horns, guns, crying babies, shouts, trains, alarms, and many bird and animal sounds. The superb lyrebird is generally recognized as the more proficient singer of the two species. Both transmit their songs from generation to generation. Males of both species sing most in the Australian winter months of June and July.

GEOGRAPHIC RANGE

Both Albert's and the superb lyrebird are native to Australia, where they occur from southern Queensland and northern New South Wales along the Great Dividing Range and south to southwestern Victoria.

HABITAT

Both species of lyrebird live only in Australia's rainforests and mixed temperate forests, although the Albert's specializes in mountainous areas and the superb occupies a broader range of elevations (from foothill to sea-level). Lyrebirds require lush under-story vegetation both to feed and to hide from predators, animals that hunt them for food.

DIET

Lyrebirds eat a carnivorous, meat eating, diet of insects and other invertebrates, animals without a backbone.

BEHAVIOR AND REPRODUCTION

The males of both species sing a lot and use their tails to perform an elaborate courtship display for any approaching females, arching their fanned tails over their backs to form a canopy. The males occupy and defend trampled mounds of vegetation, mating with any female who allows them. Females build a messy, dome-shaped nest of sticks near or on a moist patch of ground in which they lay a single, purplish gray, spotted egg. They incubate (keep warm by sitting on) the egg for six weeks without assistance from a male, and the nestling remains in the nest for six to ten weeks.

LYREBIRDS AND PEOPLE

While a source of amusement due to its close mimicry of human-generated sounds, the lyrebird is often regarded as an annoyance as well. Its habit of shuffling through leaf litter for food can be destructive when it occurs in gardens and compost heaps.

CONSERVATION STATUS

Although once nearly extinct due to habitat destruction and overhunting for its exotic tail feathers, the superb lyrebird



A LONG WAIT FOR BEAUTY

Unlike most other bird species, which reach full sexual maturity in a matter of months, young male superb lyrebirds do not grow their fancy, elaborate tails until they reach three or four years of age, and only when they are six do they acquire the extra filamentary feathers that make their appearance so dramatic. Until then, they cluster together and are known as "plain-tails."

is now regarded as common in its native environment. The Albert's lyrebird's Vulnerable status, facing a high risk of extinction, is somewhat more precarious due to its more restricted habitat, but careful protection measures have helped to stabilize its population sizes. Both species remain vulnerable to predation by feral cats and foxes, while increasing human incursion into their environment poses a strong threat.



ALBERT'S LYREBIRD

Menura alberti

SPECIES ACCOUNT

Physical characteristics: The male Albert's lyrebird (also known as Prince Albert's lyrebird) is not as dramatic looking as the superb lyrebird, since its tail lacks the outer lyre-shaped tail feathers of its cousin. The Albert's species is slightly smaller than the superb as well, with adult females measuring 33 inches (84 centimeters) and adult males measuring 35.5 inches (90 centimeters). Both sexes have small heads, long tails, and long, powerful legs and claws. They are virtually flightless, although the birds use their weak, undeveloped wings to help them hop up and down from low branches and other perches, much like a chicken does.



The male Albert's lyrebird performs an elaborate and graceful dance to attract a female bird. Once he has attracted her, he fans his tail over his back before mating with her. (Illustration by Barbara Duperron. Reproduced by permission.)

Albert's lyrebirds are deep chestnut on their upper bodies, with reddish buff throats. The males' tails are glossy black and silver-gray underneath. Both sexes are legendary for their ability to copy almost any sound, natural or mechanical. The male lyrebird's species-specific call is a piercing "caw-cree-craw-craw-wheat," and when alarmed both sexes emit a shrieking "whisk-whisk" cry.

Geographic range: Occupying a smaller range than the superb lyrebird, the Albert's lyrebird is limited to mountainous rainforests between the Mistake Range in southeast Queensland to the Nightcap Range in northeast New South Wales. In all, the bird's territory totals only 580 square miles (1,500 square kilometers), which supports an estimated 3,500 individuals. The highest population densities of Albert's lyrebird have been found at Whian Whian State Forest in the Nightcap Range, but other significant populations exist in the Richmond, Tweed, and McPherson Ranges.

Habitat: Found only in Australian rainforests at about 1,000 feet (300 meters) and above, Albert's lyrebird requires a dense understory that provides deep leaf litter for foraging. The Antarctic poplar is usually present in the lyrebird's environment as well. They bathe daily in still pools or slow-running streams.

Diet: Lyrebirds rely on their strong claws and legs to scratch through leaf litter, fallen branches, and even rocks, uncovering spiders, worms, ants, frogs, lizards, grubs, and snails.

Behavior and reproduction: In optimal conditions, Albert's lyrebirds prefer widely spaced territories, with about five pairs of birds per 0.4 square miles (1 square kilometer). They are sedentary birds, rarely leaving their own territory. Both sexes are shy and difficult to spot, and when threatened will dart and dodge quickly through the underbrush, giving out piercing calls of alarm. Because of their underdeveloped wings, the birds can run much faster than they can fly. Lyrebirds roost in the low branches of trees at night.

During the mating season from May to August, males perform an elaborate and graceful dance atop a low platform of trampled vegetation or in an area of scratched earth. Each male may have as many as ten or fifteen of these display arenas, which he visits in turn. Their

vocalizations during this time are complex and penetrating, consisting of a cycle of imitations of various natural and human-made sounds. Known as the “albertcycle,” the song is often interspersed with territorial songs, after which the male bird will pause briefly to listen for an answering challenge. Following the pause, he will usually resume his cycle where he left off or he may start all over.

Once the male attracts a female bird, he will fan his tail over his back and prance back and forth over his platform in a rhythmic, dignified manner. The male will mate with as many females as he can entice to his arena.

After mating, the female builds a loosely constructed dome of sticks up several feet (about one meter) off the ground, lining and insulating it with her own feathers, moss, and ferns. She lays one egg in a moist indentation in the center of the structure, incubating it alone and then tending to the nestling without assistance for up to nine months. The young develop slowly, remaining covered with down even at four months old.

Albert’s lyrebirds and people: Lyrebirds’ extraordinary ability to mimic sounds has amused people for as long as the species have co-existed. One local story from the nineteenth century described how a lyrebird repeatedly caused the evacuation of a logging operation with its imitation of a fire siren until the loggers discovered the culprit. However, other encounters have not been so friendly. Many farmers and gardeners are annoyed by the lyrebirds’ habit of shuffling through mulch and leaves, and some conservationists have even suggested that the birds are endangering other ground-dwelling animals and some types of vegetation with their large-scale digging. The bird’s shy and elusive nature has thwarted many attempts to study it.

Conservation status: The World Conservation Union (IUCN) categorized Albert’s lyrebird as a Vulnerable species in 2003. Part of the reason for the classification is because of the bird’s apparent inability to cross over areas of unsuitable habitat to colonize other appropriate environments. Other threats include wild cats, human infringement on rainforest areas, and naturally occurring wildfires that periodically sweep through their environment. ■

FOR MORE INFORMATION

Books:

Ford, H. A., and D. C. Paton, eds. *The Dynamic Partnership: Birds and Plants in Southern Australia*. South Australia: D. J. Woolman, 1986.

Higgins, P. J., et al., eds. *Handbook of Australian, New Zealand and Antarctic Birds*. Vol. 5, *Tyrant-Flycatchers to Chats*. Melbourne: Oxford University Press, 2001.

Rutgers, Abram. *Birds of Australia*. London: Methuen & Co., 1967.

Schodde, R., and I. J. Mason. *The Directory of Australian Birds—Passerines*. Collingwood, Australia: CSIRO Publishing, 1999.

Smith, L. H. *The Life of the Lyrebird*. Richmond, Australia: William Heinemann Australia, 1988.

Periodicals:

Curtis, H. S. "The Albert Lyrebird in Display." *Emu* 72 (1972): 81–84.

Sibley, C. G. "The Relationship of the Lyrebirds." *Emu* 74 (1974): 65–79.

Web sites:

"Albert's Lyrebird." ARKive: Images of Life on Earth. http://www.arkive.org/species/GES/birds/Menura_alberti/more_info.html (accessed on April 28, 2004).

"Albert's Lyrebird." Birdlife.net. <http://www.birdlife.net> (accessed on April 28, 2004).

"Lyrebird." Concise Britannica Online. <http://concise.britannica.com> (accessed on April 28, 2004).

"Lyrebirds." Cornell University Department of Ecology and Evolutionary Biology. <http://www.eeb.cornell.edu/winkler/botw/menuridae.html> (accessed on April 28, 2004).

"Lyrebirds." National Parks and Wildlife Service Australia. <http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Lyrebirds> (accessed on April 28, 2004).

"Lyrebird." Wikipedia. <http://en.wikipedia.org/wiki/Lyrebird> (accessed on April 28, 2004).

family CHAPTER

SCRUB-BIRDS

Atrichornithidae

Class: Aves

Order: Passeriformes

Family: Atrichornithidae

Number of species: 2 species

PHYSICAL CHARACTERISTICS

Both species of the ancient scrub-bird family, the noisy and the rufous, are 6.5 to 9 inches (16.5 to 23 centimeters) long. Male noisy scrub-birds typically weigh about 1.7 ounces (52 grams), while the smaller male rufous scrub-bird weighs somewhat less. Plainly colored in drab brown with black bars, the birds use their natural camouflage (KAM-uh-flaj) to hide themselves in dense underbrush. The rufous species is reddish brown on top with a buff belly, while the noisy scrub-bird is brown on top and reddish brown on the lower belly, fading to off-white on its breast. Males of both species have distinct black markings on their throats and breasts. Scrub-birds have strong, short legs and rounded, weak wings that render them semi-flightless. Otherwise they are generally stoutly built. Their flat, long foreheads taper to a triangular bill, and they tend to carry their longish tails at an upward angle. Juveniles look similar to adults, but with duller plumage.

GEOGRAPHIC RANGE

Both species of scrub-bird occur only in Australia and only within restricted ranges. The rufous species lives in isolated populations in the Queensland-New South Wales border area. The noisy scrub-bird occupies the far southwestern corner of the country in Two People's Bay Nature Reserve near Albany and, since they were reintroduced there in 1998, the Darling Range of Western Australia, outside the city of Perth.

HABITAT

Scrub-birds require dense, low vegetation in which to hide from predators, animals that hunt them for food, and forage,

phylum

class

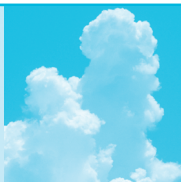
subclass

order

monotypic order

suborder

▲ family



BE CAREFUL WHAT YOU WISH FOR ...

Many bird lovers have traveled to Australia in search of the scrub-bird, whose elusiveness makes a sighting even more attractive. However, some people have reported that when they finally caught a glimpse of the shy creature, the scrub-bird's alarm call was so piercing and loud that it actually hurt their ears!

search, for food. They are adapted to a thick layer of leaf litter and a moist microclimate, a small, uniformly moist area. The rufous scrub-birds prefer temperate rainforest, whereas the noisy scrub-bird occupies semi-arid areas.

DIET

Both the rufous and noisy scrub-birds eat insects that they find by picking through layers of leaves on the forest floor. Noisy scrub-birds occasionally prey on frogs, geckos, and lizards as well.

BEHAVIOR AND REPRODUCTION

Male scrub-birds are famous for their ear-piercing, metallic calls and ability to imitate other birds' songs as they sing to mark and identify their permanent territories. The noisy scrub-bird has two alarm notes and a three-note call, with a loud, variable song of ten to twenty notes, while the rufous scrub-bird employs a loud, repeated chirp and two alarm notes. Females of both species are much less vocal, and often remain silent or make only quiet squeaks and ticking sounds. Although alert and energetic, both species are shy and highly secretive, moving quickly into dense vegetation when disturbed. Due to their underdeveloped wings, which cannot sustain more than a few yards of flight, scrub-birds prefer to run when threatened. During the mating season (spring for the rufous and winter for the noisy), males of both types prance and display with erect tails, much like their close relatives, the lyrebirds. Scrub-birds generally mate for life, and females occupy areas on the outskirts of the males' territories. Territories are usually widely spaced, with males marking and occupying about 2.5 acres (1 hectare) each. Females take sole responsibility for their clutches of one or two eggs, building a domed nest with a side entrance and partially or completely lined with wood and grass pulp. Nestlings take up to one month to fledge, grow the feathers needed for flying.

SCRUB-BIRDS AND PEOPLE

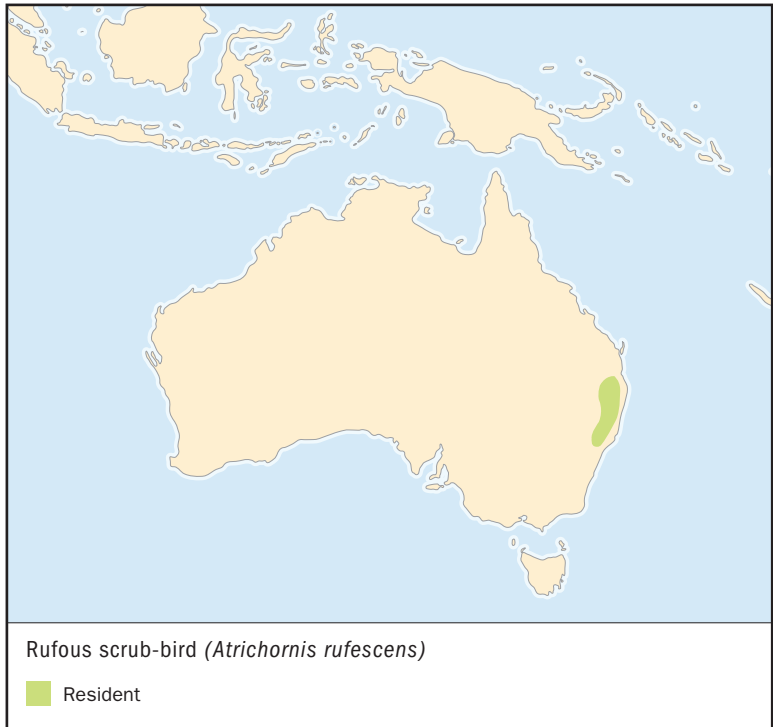
Both species of scrub-bird are so secretive and sedentary, still, that only the most patient of birdwatchers ever gets to see one. Many people have reported sitting silently for hours

near a calling male just to get a glimpse of the creature. The scrub-bird has become a rallying point for Australian conservationists as they have labored to raise the birds' numbers over the past several decades.

CONSERVATION STATUS

The rufous scrub-bird remains one of the rarest birds in the world and has the official conservation status of Near Threatened, in danger of becoming threatened with extinction. Both species were thought to be extinct until the early 1960s, but environmentalists have succeeded in increasing populations of the noisy scrub-bird from fewer than 50 breeding territories in 1961 to nearly 750 in 2002. As a result, the noisy species has been downgraded from Endangered, facing a very high risk of extinction, to Vulnerable, facing a high risk of extinction.

SPECIES ACCOUNT



RUFIOUS SCRUB-BIRD *Atrichornis rufescens*

Physical characteristics: The rufous scrub-bird ranges in size from 6.5 inches (16.5 centimeters) for females to 7.1 inches long (18 centimeters) for males. Adults are a dark, reddish-brown with fine black bars on top and a dun-colored belly. Males have black markings in the center of a whitish throat. Both sexes carry their relatively long tails slightly upright. The rufous scrub-bird is perhaps the only species of bird in the world that does not have a wishbone, part of the breast bone, which is one reason it cannot fly very well.

Geographic range: This species exists solely on the central east coast of Australia, at the border between New South Wales and Queensland states. Their isolated populations are concentrated on the high-rainfall Border and Gibraltar Ranges, specifically along the Main Border Track from Mount Bithongable to Mount Howbee.

Habitat: Rufous scrub-birds require a moist microclimate at ground level, a dense layer of ground cover at least 3 feet (0.9 meters) high, and thick leaf litter in which to forage for food. These birds are almost always found at elevations above 2,000 feet (600 meters), although a sighting at about 790 feet (240 meters) was reported in 2000. Their habitat is usually associated with human-created or natural openings in the forest canopy. Most of the birds (an estimated 65 percent) live in wet eucalyptus (yoo-kah-LIP-tus) forests or Antarctic beech forests that are well buffered from fires in nearby rainforests. Mating pairs' territories are spaced far apart, with a maximum of six pairs per 0.4 square miles (1 square kilometer).

Diet: Rufous scrub-birds use their strong legs and claws to scratch through leaf litter, flushing out invertebrates such as beetles, ants, and spiders.

Behavior and reproduction: Remaining sedentary within well-defined territories for their entire adult lives, rufous scrub-birds dislike disturbance and will run mouse-like into thick foliage at the slightest threat. The species is alert and forages with enthusiasm, but is shy and evasive in general. The female rufous is even more elusive. Because of their underdeveloped wings, rufous scrub-birds run when threatened, instead of flying. During breeding season in September to November (Australia's spring), males use their elevated and fanned tails, lowered wings, and loud, melodious song to woo their partners. They can mimic other birdcalls well, but also use a species-specific "chip" sound. Rufous scrub-birds are typically monogamous (muh-NAH-guh-mus). Females occupy small areas on the outside of their mates' territories. The birds prefer to have widely spaced territories, with males marking and occupying about 2.5 acres (1 hectare) each, ideally. Females take sole responsibility for their clutches of two eggs (one of which is often infertile). They build a domed nest near the ground with a side entrance, completely lining it with a cardboard-like substance made of chewed wood and grass pulp. She attends the chicks for the month it takes them to fledge.

Rufous scrub-birds and people: Avid birdwatchers from all over the world travel to Australia in hopes of seeing one of these rare birds. The species' elusive and secretive nature, in addition to its declining numbers, make it a thrilling experience for many bird lovers.



The rufous scrub-bird lives on the east coast of Australia, usually at elevations above 2,000 feet (600 meters). (Illustration by Bruce Worden. Reproduced by permission.)

Conservation status: A 1999 survey of rufous scrub-bird populations suggested an ongoing decline in the bird's presence. Destruction of the species' preferred habitat through logging and burning has caused much of the population decrease, but conservationists are working to educate people, and land clearing no longer appears to be a threat. The rufous scrub-bird, with habitat estimated at only 580 square miles (1,500 square kilometers), has Near Threatened conservation status. ■

FOR MORE INFORMATION

Books:

Birdlife International. *Threatened Birds of the World*. Barcelona: Lynx Edicions, 2000.

Ferrier, S. "Habitat Requirements of a Rare Species, the Rufous Scrub-bird." In *Birds of Eucalyptus Forests and Woodlands: Ecology, Conservation, and Management*. Sydney: Royal Australian Ornithological Society.

Higgins, P. J., et al., eds. *Handbook of Australian, New Zealand and Antarctic Birds*. Vol. 5, *Tyrant-Flycatchers to Chats*. Melbourne: Oxford University Press, 2001.

Schodde, R., and I. J. Mason. *Australian Birds: Passerines*. Collingwood, Australia: CSIRO, 1999.

Sibley, C. G., and J. E. Alquist. *Phylogeny and Classification of Birds: A Study in Molecular Evolution*. New Haven, CT: Yale University Press, 1990.

Periodicals:

Chislm, A. H. "The Story of the Scrub-birds." *Emu* 51 (1951): 89–112, 285–297.

Web sites:

"Noisy Scrub-bird Reintroduced to Darling Range." The Nature Base. <http://www.calm.wa.gov.au/news/news.cgi?item=923494339> (accessed on May 17, 2004).

"Rufous Scrub-bird (*Atrichornis rufescens*)." Birdlife.net. <http://www.birdlife.net/datazone/search/species> (accessed on May 17, 2004).

"Rufous Scrub-bird: Lamington National Park." Lamington National Park, Queensland, Australia. <http://www.lamington.nrsn.uq.edu.au/Documents/Birds/rufousscrubbird.htm> (accessed on May 17, 2004).

"Scrub-bird." Fact Index. http://www.fact-index.com/s/sc/scrub_bird.html (accessed on May 17, 2004).

"Scrub-birds." Planet Pets. <http://www.planet-pets.com/plntsbird.html> (accessed on May 17, 2004).

"Scrub-birds (*Atrichornithidae*)." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/scrub-birds.html> (accessed on May 17, 2004).

family CHAPTER

LARKS Alaudidae

Class: Aves

Order: Passeriformes

Family: Alaudidae

Number of species: 92 species

PHYSICAL CHARACTERISTICS

Although there are numerous species of larks, most of them have in common what is known as a “larkspur,” a long, straight claw on the hind toe. These roughly sparrow-sized birds are known for their elaborate, melodious songs and their flamboyant song-display flights during mating season. Because they nest on the ground, larks have evolved into fairly dull-looking birds as protection against predators, animals that hunt them for food. They generally vary in color from brown to pinkish-buff to gray, although some sport more distinguished markings and colors. Usually their upper bodies are heavily streaked or unmarked with a grayish brownish color that closely matches the soil in their specific habitats. Their breasts and underparts are often lighter in color and unmarked. Larks range widely in size from 3.9 to 9 inches (10 to 23 centimeters) and can weigh from just under half an ounce to 2.6 ounces (12 to 73 grams). In most species both sexes look very similar, although the males are often larger than the females.

Some types of larks, most notably the crested lark, have tiny crown feathers that they can raise into a crest, while others, like the horned lark, have small tufts that stand out on the sides of their heads, giving them a horned appearance. In addition, there are almost as many different kinds of bills among larks as there are species. They range in shape from long, thin, and pointed to cone-shaped, short, and thick, depending on the main food source and feeding methods to which a local species has adapted. Most larks have short legs and strong feet for scratching in the dirt, along with a hind toe that is much longer than the front

phylum

class

subclass

order

monotypic order

suborder

▲ family

ones. However, some larks, depending on whether they are fast runners or live on hard-packed dirt, have shorter spurs.

After they hatch, baby larks are covered with a thin, fine down. As they mature, they develop a uniformly spotted plumage that conceals them from predators. Unlike other similar birds species, larks grow their mature plumage as soon as they leave the nest and are able to live on their own.

GEOGRAPHIC RANGE

Larks occur all over the world, but many of the species are extremely localized and are either rare or endangered. Most larks live in Africa, but many types also inhabit Asia, Australia, North America, South America, and all of Europe.

HABITAT

All species of lark prefer the open, sparsely vegetated landscapes of grasslands, heaths (shrubby lands), rocky plains, and steppes, but some like more vegetation than others. For instance, the flapped lark and the woodlark rely on the presence of mixed vegetation types such as small bushes and trees for perching and grasses for building nests. Many larks use plowed fields and even wastelands in North America for their breeding grounds, while others find homes on arctic steppes, on high mountain slopes (even up to 15,100 feet [4,600 meters] in the Himalayas), or in the desert.

DIET

Larks eat almost any sort of insect, including venomous spiders, snails, beetles, stink bugs, millipedes, and (rarely) winged bugs taken during flight, as well as seeds, buds, fruits, and green vegetation. All nestlings receive insects to eat. Most larks swallow whole seeds, which are then pulverized by grit in the birds' stomachs. Others use their strong, thick beaks to dehusk seeds or smash them on the ground. Some larks have been observed breaking snail shells on rocks or dropping them from the air. Since water is often unavailable in their environments, many lark species drink dew off leaves or grass, even drinking salty or brackish water when necessary.

BEHAVIOR AND REPRODUCTION

Despite their generally lackluster appearance, larks are energetic and charismatic birds. They are particularly known for their long, beautiful songs, which can last from a few minutes to an

hour. Several of the species, especially the Mongolian lark, the crested lark, and the melodious or Lakatoo lark, are capable of imitating dozens of different birds and even human whistling. Most singing comes from male larks during mating season, when they use aerial song-displays to attract mates and defend their territories. Typically the males will ascend from a perch vertically before descending while singing, either gliding back down or closing his wings to plummet in a dive that he stops only by opening his wings at the last moment. Some species of lark, including the Dupont's lark, make rattling sounds with their flight feathers during their ascent, while others, namely the black lark, clap their wings over their back during their song-displays. The flapped lark uses wing sounds exclusively, and some species sing only from perches at the tops of trees, bushes, and rocks instead of during aerial song-displays.

Desert-dwelling species such as the sparrow-lark never settle in one place, their nomadic movements depending on food supply and rainfall. Both migratory and nomadic lark species tend to gather in flocks, and sometimes form male- or female-only flocks in the winter. Many of the seed-eating larks join together in large flocks.

With the exception of mating season, when some species occasionally sing at night, larks are active during the daytime (diurnal) and sleep at night in shallow depressions they carve into the ground with their claws. Like many birds, they bathe in dust or sand rather than water, although they have been seen deliberately letting rain soak their feathers. Larks prefer to scratch their heads on pointed objects such as branches and rocks, rather than using their claws. Strong fliers, they can often be identified by their undulating flight pattern during which they periodically close their wings. However, many species of these birds can walk and run so quickly that they often need not fly. Larks that live in hot, dry climates perch on raised stones and bushes to stay off the hot ground, taking shelter during the heat of the day in lizard burrows or the shade of rocks or plants. Parents shade their nestlings by standing over them with spread wings.

Rainfall, even very erratic precipitation, will trigger breeding behavior in nomadic species of lark. Otherwise, the regular breeding season occurs from March through July or whenever the rainy season begins. As a family, larks are monogamous (muh-NAH-guh-mus) for at least one breeding season and

may raise one to three broods together. Males attract a mate on the ground by hopping and prancing around an interested female in an upright posture; presenting an upright tail; drooping, slightly spreading, and sometimes quivering the wings; and raising the feathers on top of the head. Throughout this display, males sing fragments of their characteristic songs, and sometimes offer small pieces of food prior to mounting the female.

The majority of larks build their grass-lined nests in shallow, cup-shaped indentations that they scratch into the ground. If this is impossible for some reason, many larks will surround a small area with pebbles or other small items to delineate the space. Several species build a dome over their nests using plant materials and supported by close-by vegetation. Usually females build their nests alone, but the male of such species as the calandra lark and the Oriental skylark typically assists. Males of other species, including the chestnut-backed sparrow-lark, present ritual gifts of such useful items as spider webs, pebbles, and other nesting material.

Lark eggs are generally light yellow or cream-colored, with an even covering of spots. Females lay one egg per day in the early morning, and in years of abundant rainfall and other beneficial factors will lay a clutch of two to five eggs. Larks that live in harsher climates often have smaller clutches. Once the female has laid all her eggs, she begins to incubate, sit on to warm, them. In some species, including the sparrow-lark, the male might help incubate the clutch as well. However, both sexes of all lark species feed and care for the chicks. While still unable to fly, the young eat food provided by the parents. The male will care for a second brood alone, if it occurs.

LARKS AND PEOPLE

Larks have been a favorite bird of humans because of their long, melodious song (especially that of the skylark), which often evokes thoughts of good fortune and fresh beginnings. The birds' extravagant aerial song-displays no doubt led to the description of a group of larks as an "exaltation," and literature is full of references to the birds as harbingers of spring and bringers of good harvests. Trapping and hunting larks (particularly skylarks) remains a popular pastime in France and the Mediterranean region, where up to ten million are killed annually.

CONSERVATION STATUS

The World Conservation Union (IUCN) has determined that eleven lark species now require special protection. The raso and Rudd's larks of the Cape Verde Islands are Critically Endangered, facing an extremely high risk of extinction; Ash's lark in Somalia and Botha's lark in South Africa are Endangered, facing a very high risk of extinction; and the red lark, Archer's lark, Degodi lark, and Sidamo bushlark are Vulnerable, facing a high risk of extinction. Sclater's lark, the latakoo, or melodius, lark, and Agulhas long-billed lark are Near Threatened, in danger of becoming threatened with extinction.

Many other lark species, but especially those with restricted ranges, small population sizes, or unprotected habitat, are having trouble maintaining their populations due to habitat loss and fragmentation, introduced predators, and illegal hunting.

SPECIES ACCOUNTS



AUSTRALASIAN LARK *Mirafrja javanica*

Physical characteristics: With seventeen subspecies, subgroups of a species in a particular location, the Australasian lark comes in a variety of colors and sizes depending upon its local habitat, although generally the bird weighs about 0.7 ounces (20 grams) and is 4.7 to 5.9 inches (12 to 15 centimeters) long. The Australasian lark has reddish wing patches and inconspicuous coloring. Both sexes of Australasian larks look the same.

Geographic range: As its name indicates, the Australasian lark occupies Australia and nearby Asian countries. It is found in Thailand, the Philippines, Indonesia (Kalimantan, Java, Lesser Sunda Islands,

Bali), New Guinea, and all areas of Australia except the southwest.

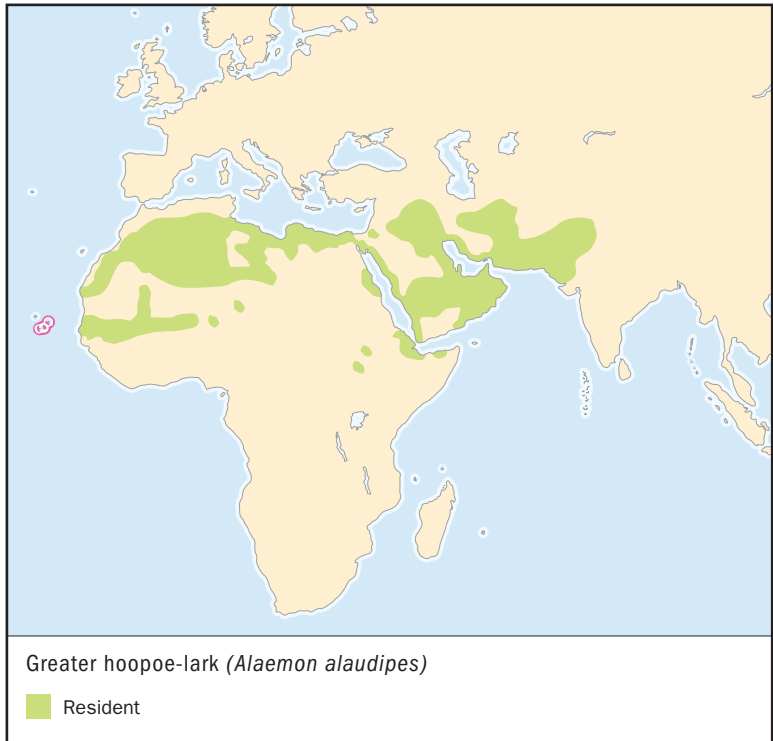
Habitat: Australasian larks prefer to live in salty marshes, among scattered bushes in open grassland, and at the edges of plowed fields.

Diet: Like all larks, this species eats seeds and insects.

Behavior and reproduction: Australasian larks are one of the many lark species that regularly perch on wires and trees rather than remaining on or near the ground. The males' song-displays, which can last forty minutes, usually weave in the songs of other birds. This species flocks in small groups outside mating season and is migratory in southern Australia. During mating season, which lasts from November through January, the birds form monogamous pairs and together construct domed nests among low clumps of grass. The female generally lays a clutch of two to four eggs.

Australasian larks and people: The Australasian lark has no special significance to humans.

Conservation status: This species is not threatened. ■



GREATER HOOPOE-LARK

Alaemon alaudipes

Physical characteristics: One of the world's largest larks, the greater hoopoe-lark was so named because of its resemblance to the hoopoe (HUU-puu) bird. In fact, its scientific name means "hoopoe with legs of a lark." They typically measure 7.1 to 7.9 inches (18 to 20 centimeters) long. Males weigh 1.4 to 1.8 ounces (39 to 51 grams), while females, whose bills are also roughly 30 percent shorter, weigh between 1.1 to 1.6 ounces (30 to 47 grams). The hoopoe-lark has a long, slender bill that curves downward slightly. In both sexes, underparts are whitish, upperparts are sand-colored, and breast and throat are black-spotted. The bird has long, broad wings with a bold black-and-white pattern.

Geographic range: The greater hoopoe-lark is an African and Asian bird, occupying patches of habitat in the Cape Verde Islands, in North Africa from Mauritania to Egypt and Sudan, and across the Middle East to India's northwest region.



Greater hoopoe-larks eat mostly insects and snails. They smash snails on rocks or drop them from the air to crack their shells. (Illustration by Emily Damstra. Reproduced by permission.)

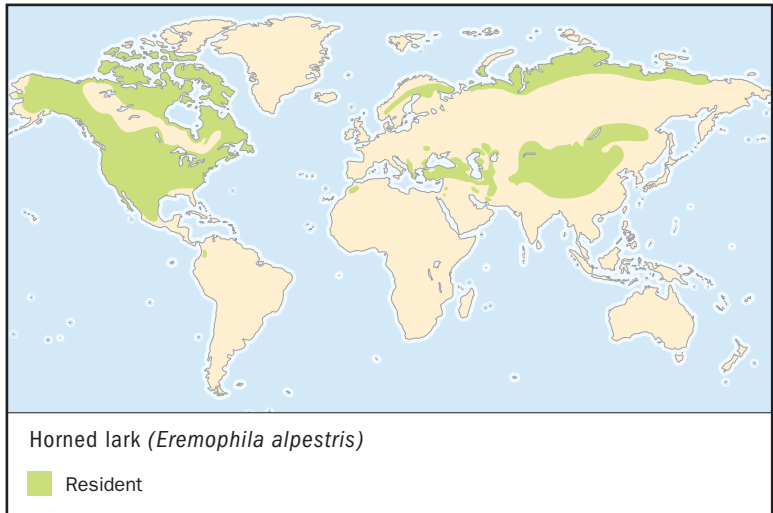
Habitat: The greater hoopoe-lark lives in deserts or semideserts and has evolved the ability to survive with little water.

Diet: Hoopoe-larks eat mostly insects and snails, from which they take nutrition as well as water. The birds use their down-curved bills to dig their prey out of hiding places and sandy spots, and have been observed smashing snails on rocks or dropping them from the air to crack their shells.

Behavior and reproduction: Usually seen alone or in pairs, the hoopoe-lark often allows birdwatchers to come within several feet (meters) before it flees. Males of the species defend their territories with a spread-winged posture, and their songs are piercing and loud. The male hoopoe-lark's song-flight, which he may perform continuously for up to an hour, consists of jumping up from a perch as he starts to sing and then flapping vertically to 33 feet (10 meters). He may then perform somersaults to show off his contrasting tail and wing plumage before plummeting to Earth, opening his wings only as he pulls out of the dive and lands.

Greater hoopoe-larks and people: The greater hoopoe-lark has no special significance to humans.

Conservation status: This species is not threatened in general, although in some locations its populations are declining due to conversion of suitable breeding grounds to agricultural, military, or recreational use. ■



HORNED LARK

Eremophila alpestris

Physical characteristics: The horned lark gets its name from the tiny, protruding black feathers on each side of its head, which give the bird a horned appearance. The birds have a softly tawny color on their backs, while their underparts are lighter. They have black bibs, broad black stripes under the eye, and a buttery-yellow or white throat. Tails are mostly black with white outer feathers. Females' "horns" are less apparent and their plumage is more muted overall. Horned larks are generally 5.9 to 6.7 inches (15 to 17 centimeters) long. Males weigh from 1.1 to 1.7 ounces (30 to 48 grams) and females weigh 0.9 to 1.5 ounces (26 to 42 ounces). Wingspan ranges from 12.25 to 14 inches (31 to 35.5 centimeters).

Geographic range: The only member of the lark family native to North America, horned larks nest from Alaska and Canada down to West Virginia, Missouri, North Carolina, coastal Texas, and Kansas, wintering along the Gulf Coast. It also appears throughout northern and southern Europe, where it winters around the North Sea, and in northern and southern Asia. Sightings have also been reported in Morocco, Colombia, Lebanon, and northern Israel.

Habitat: Horned larks prefer to live in large fields and open areas of grassland (including those at airports and in farmland), but also occupy habitats such as arctic tundra and shoreline beaches.



The horned lark gets its name from the tiny black feathers on each side of its head, which look like horns. This is the only lark native to North America. (Illustration by Emily Damstra. Reproduced by permission.)

Diet: Horned larks eat mainly insects (especially wasps, ants, caterpillars, grasshoppers, and spiders) during the mating season, but concentrate on seeds in wintertime.

Behavior and reproduction: During its song-display, the male horned lark ascends without singing to heights of 300 to 800 feet (91 to 244 meters), where it begins to circle and sing a high-pitched, tinkling song. When it completes the song, the bird closes its wings and drops headfirst, opening its wings and pulling out of the dive at the last possible second. The male also perches on fence posts, rocks, or bushes to sing its mating song. Horned larks are monogamous for at least one mating season (March through July) and prefer to make their cup-shaped nests on the ground in barren, sandy, or stony areas. Females often surround the nest with a ring of pebbles and line it with down, fine grass, and hair. They commonly lay three to five smooth, glossy, pale greenish white and brown-speckled eggs in a clutch at a rate of one per day. Females begin incubating the eggs once the entire clutch has been laid, sitting on the nest for ten to fourteen days. Nestlings, who receive care from both parents, have brown skin and long, whitish down. They typically leave the nest after nine to twelve days.

The horned lark is particularly known for its preference for walking sedately to travel small distances instead of the more usual hopping, and may often be heard singing its characteristic “tsee-ee” song from any slight elevation. Birders generally regard the species as tough and intrepid because of its tolerance of seemingly inhospitable climates and conditions.

Horned larks and people: The horned lark's jaunty appearance makes it a favorite among birdwatchers.

Conservation status: This species is not officially threatened, although its habitat in a number of areas is jeopardized by development and reforestation of grasslands. As a ground-nester, the horned lark is also heavily preyed upon by cats, skunks, raccoons, coyotes, and other predators. ■

FOR MORE INFORMATION

Books:

Erich, P., et al. *The Birder's Handbook: A Field Guide to the Natural History of North American Birds*. New York: Simon and Schuster, 1988.

Keith, S., et al., eds. *The Birds of Africa*. Vol. 4. London: Academic Press, 1992.

Sibley, Charles G., and Burt L. Monroe. *Distribution and Taxonomy of Birds of the World*. New Haven, CT: Yale University Press, 1990.

Web sites:

"Australasian Lark." Avibase: The World Bird Database. <http://www.bsc-eoc.org/avibase.jsp?pg=summary&lang=EN> (accessed on May 17, 2004).

"Hoopoe-Lark." Birding Israel. <http://www.birding-israel.com/bird/News/inFocus/hoopoeLark/> (accessed on May 17, 2004).

"An Animal of the High Desert: The Horned Lark." Idaho National Engineering and Environmental Laboratory: Environmental Surveillance, Education, and Research Program. <http://www.stoller-eser.com/hornedlark.htm> (accessed on May 17, 2004).

"Horned Lark Fact Sheet." State of Connecticut Department of Environmental Protection. <http://dep.state.ct.us/burnatr/wildlife/factshts/hlark.htm> (accessed on May 17, 2004).

"Lark." Wikipedia. <http://en.wikipedia.org/wiki/Alaudidae> (accessed on May 17, 2004).

family CHAPTER

SWALLOWS Hirundinidae

Class: Aves

Order: Passeriformes

Family: Hirundinidae

Number of species: 88 species

PHYSICAL CHARACTERISTICS

Swallows are distinguishable by their long, sleek tails and wings. Their gaping bill and long tails and wings are built for the long-term flight and maneuverability that enables them to catch their major source of food, flying and water-skimming insects.

Most swallows have black, brown, iridescent blue, or iridescent green plumage on top with a lighter tan, dark orange, or white chest. Their long tails may be forked (like the barn swallow) or straight across (like a cliff swallow), and act as an aerial rudder, or guide.

The legs and feet of the swallow are short and built primarily for perching, not walking. The average size of a swallow ranges from 4.75 to 8 inches (12.0 to 20.3 centimeters) in length, and they weigh from 0.4 to 2.1 ounces (10 to 60 grams).

GEOGRAPHIC RANGE

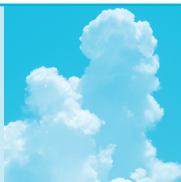
The majority of swallow species are found in Africa, but one can find swallows on virtually every major continent, except Antarctica and the high Arctic. They are also absent from New Zealand and other oceanic islands.

HABITAT

Swallows seek breeding grounds that have a good supply of flying and/or water-skimming insects, such as areas near lakes, ponds, rivers, streams, and wetlands. The species that build mud nests, such as cave and cliff swallows, also seek areas where mud is plentiful. Other species have specific requirements based

phylum
class
subclass
order
monotypic order
suborder

▲ family



APARTMENT DWELLERS

North American purple martins that live east of the Rocky Mountains rely exclusively on human-made “apartment-style” martin houses for nesting. The practice began hundreds of years ago when Native Americans hung hollow gourds for the birds to nest in. Western purple martins are not colonial and typically nest in tree cavities, although some will use solitary nesting boxes if available.

on their nesting habits. During nonbreeding seasons, the majority of North American swallows, like the purple martin, migrate to the warmer climates of Central and South America.

DIET

While tree swallows will eat berries (particularly waxy bayberries) and fruits, most swallow species subsist entirely on flying and water-skimming insects such as beetles and flying ants. Purple martins will eat bigger insects as large as a butterfly, and other species also eat spiders and swarming insects like midges and mosquitoes. Virtually all insects are eaten in flight, and sometimes on the surface of the water. Swallows can even drink in flight by dipping their bills into the water as they fly across a pond or lake.

BEHAVIOR AND REPRODUCTION

Most swallows form monogamous (muh-NAH-guh-mus) pairs. Some species build their nests either in natural or human-made holes, such as tree crevices or nesting boxes. Other species use mud pellets carried by the bill-full to create nests in caves or under human-made overhangs, such as bridges. Migrating species of swallows travel in huge flocks to warmer climates in the winter, and return with the warm weather and hatching insect population.

SWALLOWS AND PEOPLE

Most swallows have a good relationship with their human neighbors. They are attractive birds that adapt well to habitat changes imposed by humans. While some people may consider a mud nest in their eaves or on their front porch a nuisance, the swallows' appetite for flying insects can help keep the pest population down.

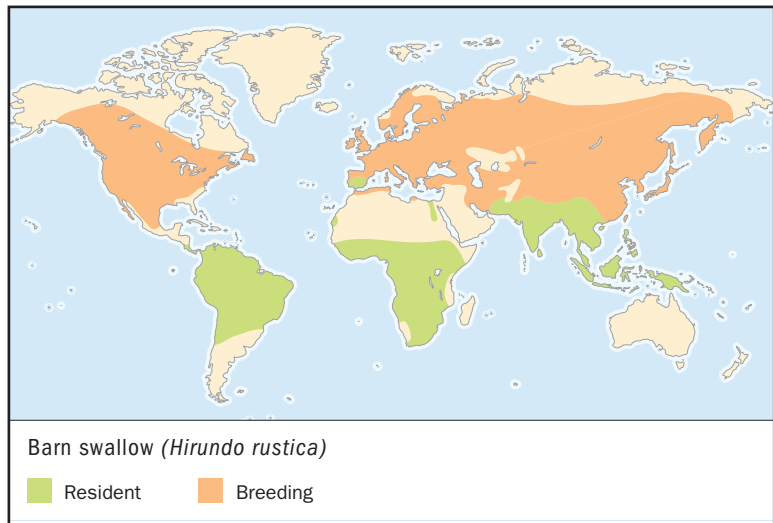
CONSERVATION STATUS

There is one Critically Endangered, facing an extremely high risk of extinction, species of swallow, the white-eyed river-martin. There are estimated to be fewer than fifty adults of the species, and the bird, which is native to Thailand, has not been

sighted in twenty years and therefore may already be extinct. Their decline has been caused by hunting, habitat destruction, and deforestation.

Four species classified as Vulnerable, facing a high risk of extinction, are also noted by the World Conservation Union (IUCN): the blue swallow, white-tailed swallow, Bahama swallow, and golden swallow. Habitat loss due to deforestation and agricultural land use has been particularly destructive to cavity nesting and grassland-dwelling swallows.

SPECIES ACCOUNTS



BARN SWALLOW *Hirundo rustica*

Physical characteristics: The barn swallow has iridescent dark blue plumage on its back, with a dark orange throat and orange to buff breast, although there are some coloring variations among the six subspecies of the bird. It is the only species of swallow that has a long, deeply forked tail. The average size of the barn swallow is 7.5 in (19 cm) long with a weight of .6 oz (17 g).

Geographic range: During the summer months, barn swallows can be found throughout North America. The birds have the most widespread range of any swallow species, and are also found throughout Europe, Asia, Myanmar, Israel, and northern Africa. North American barn swallows winter in Central and South America, while their European and Asian counterparts migrate to central and southern Africa and south and Southeast Asia.

Habitat: During breeding season, barn swallows settle in habitats with abundant insects and some access to wet earth (such as from riverbanks or drainage ditches). They build their cone-shaped, open-topped mud nests in sheltered natural areas, including cliff overhangs and caves. They also quite frequently choose human-made structures to house their families, creating nests in the rafters of barns, the underside of highway overpasses, and the eaves of other buildings.



Because of their abundant insect population, farms make ideal places for barn swallows to live, and the birds can frequently be seen flying close to crops feeding on insects. Along with feathers, the straw and mud that are found in livestock areas also make excellent building materials for a barn-based nest. Barn swallows migrate towards warmer climates in the winter, and can be found in drier climates, such as the desert, when nesting isn't a priority.

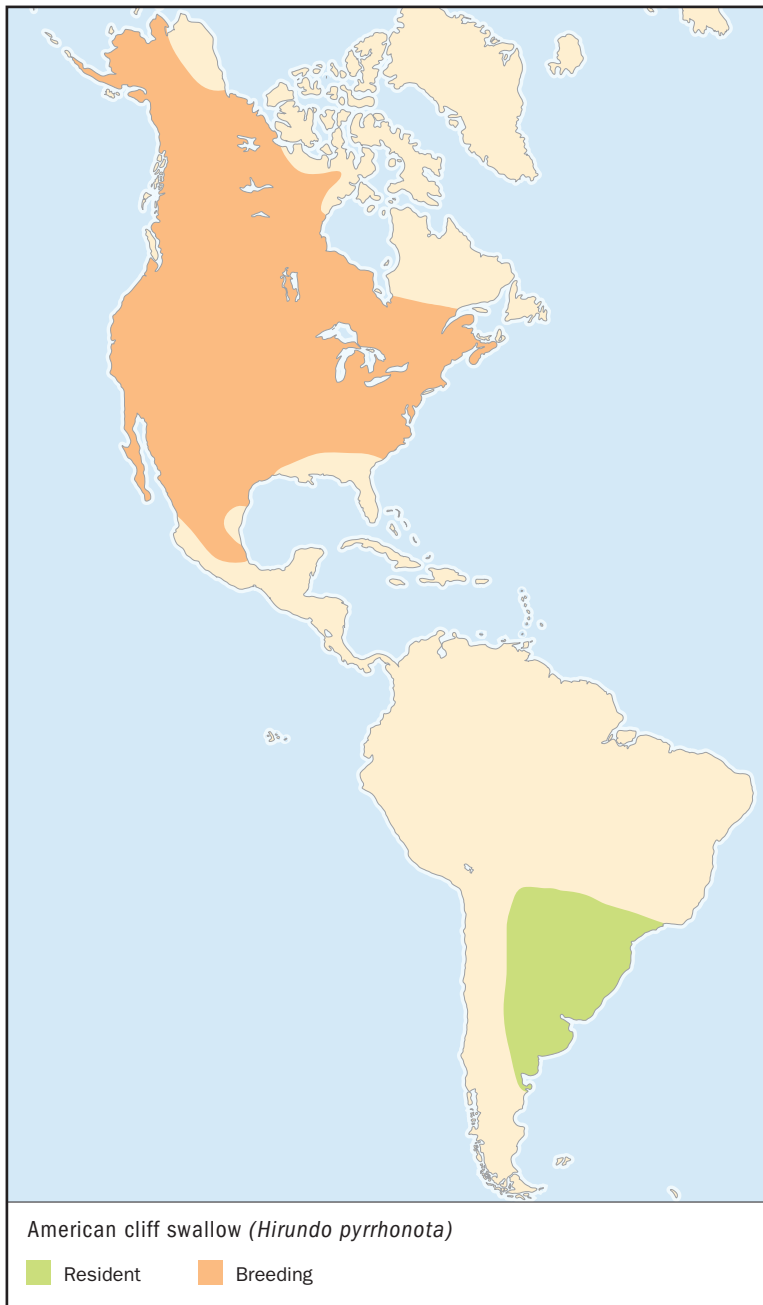
Diet: Barn swallows feed on flying insects.

Behavior and reproduction: Barn swallows return to the same area each year to breed, hatch, and fledge, raise until they can fly, their young. Often, they will use the same nest year after year if it remains intact. Building a mud nest may take anywhere from a week to a month, and both male and female work together, using thousands of mud pellets carried one by one in their bills. Straw and grass are also used, and the nests are lined with feathers. Barn swallow nests hold three to six eggs, and both female and male may share incubation duties, sitting on the eggs to keep warm. The birds are colonial, meaning that they often build nests in groups; however, males will defend their nest vigorously from both predators, animals that hunt them for food, and other barn swallows.

Barn swallow nests hold three to six eggs, and both female and male may share incubation and feeding duties. (Dwight Kuhn/Bruce Coleman Inc. Reproduced by permission.)

Barn swallows and people: Because of their appetite for flying insects that annoy, destroy vegetation, and can carry disease, barn swallows are popular neighbors, particularly to farmers.

Conservation status: Barn swallows are abundant, and not considered threatened. ■





American cliff swallows build their mud nests not only on the underside of cliffs, but also on the outside of overhanging human-made structures, such as bridges and dams. (© Brenda Sharp/Photo Researchers, Inc. Reproduced by permission.)

AMERICAN CLIFF SWALLOW

Hirundo pyrrhonota

Physical characteristics: American cliff swallows have a long square tail, black to blue back, rust-colored throat and rump, white forehead spot, and white to buff underside. They average 5.1 in (13 cm) in length and 0.8 oz (22.7 g) in weight.

Geographic range: This species breeds throughout North America and migrates to Central and South America in the winter.

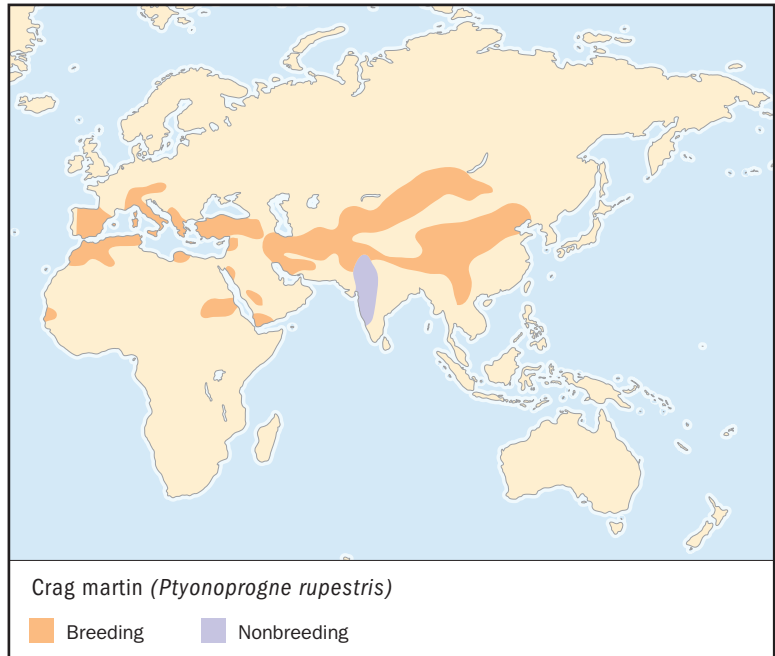
Habitat: The cliff swallow builds its mud nest in covered areas such as the underside of cliffs and on the outside of overhanging human-made structures. They are found in a wide variety of biomes where water is available, and even in desert areas near towns and human-made construction. The nests are typically built in colonies, and unlike the barn swallow nest, they are completely enclosed with a small hole for coming and going.

Diet: American cliff swallows feed on insects while the birds are flying.

Behavior and reproduction: Cliff swallows are monogamous, migrating birds. They return to their mud nests annually to lay a clutch of three to six eggs, which they incubate for about two weeks. The brood leaves the nest approximately three weeks after hatching. Some cliff swallows are parasitic, and will lay their eggs in other cliff swallow nests within their colony to be incubated and raised by the other birds.

American cliff swallows and people: Human-made structures like bridges and dams provide an attractive spot for many cliff swallow colonies and in this sense the birds have benefited from development and construction.

Conservation status: American cliff swallows are common and are not considered threatened. ■



CRAG MARTIN

Ptyonoprogne rupestris

Physical characteristics: Crag martins are an average of 5 in (14 cm) in length. They are brown on top with a dusky color on the throat and belly and dark under the wing. When they fan their squared tails, white spots are visible.

Geographic range: The crag martin breeds in mountainous areas of Europe and Asia, and migrates to the Middle East and Africa. Spain and Portugal have the largest European population, the birds are also found on some Mediterranean islands. Some varieties of crag martin are resident, meaning that they do not migrate.

Habitat: Crag martins prefer to breed in mountainous areas, but like other mud-nest dwelling swallows, can be found in virtually any biome that has a plentiful insect population and offers supplies for nest building during breeding season. Crag martin mud nests are open and are constructed under cliff edges or human-made overhangs.

Diet: The crag martin feeds on flying insects.

Behavior and reproduction: The female crag martin incubates her clutch of three to five eggs. Once the eggs are hatched, both parents feed the chicks.

Crag martins and people: Habitat destruction through development could negatively impact the crag martin, but like other mud-nesters of the swallow family, the species has proven itself very adaptable by building their homes on human-made structures.

Conservation status: Crag martins are plentiful throughout Europe and Asia. ■

FOR MORE INFORMATION

Books:

Alderfer, Jonathan. "Swallows." In *Reference Atlas to the Birds of North America*. Edited by Mel Baughman. Washington, DC: National Geographic Press, 2003.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Periodicals:

Milius, S. "Birds May Inherit Their Taste for the Town." *Science News* (Dec 23, 2000): 406.

Web sites:

"Barn Swallow." *All About Birds*. Cornell Lab of Ornithology. http://birds.cornell.edu/programs/AllAboutBirds/BirdGuide/Barn_Swallow_dtl.html (accessed on May 28, 2004).

"Swallows: Barn Swallows in Battery Pensacola." National Park Service: Gulf Islands National Seashore. <http://www.nps.gov/guis/extended/FLA/Nature/Swallow.htm> (accessed on May 28, 2004).

"Attracting and Managing Purple Martins." Purple Martin Conservation Association. <http://www.purplemartin.org/main/mgt.html> (accessed on May 29, 2004).



While crag martins' natural forest habitat is destroyed by human development, the birds have adapted to build their nests on human-made structures, such as houses and bridges. (Illustration by Brian Cressman. Reproduced by permission.)

PIPITS AND WAGTAILS

Motacillidae

Class: Aves

Order: Passeriformes

Family: Motacillidae

Number of species: 54 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Birds of the Motacillidae family can be divided into three groups: pipits, longclaws, and wagtails. All members of the family are small to medium sized, ranging in length from 5 to 8.75 inches (12.7 to 22.2 centimeters). Adult wagtails are perhaps the most colorful birds of the group, with their black, white, green, yellow, or gray stripes and patterns. The coloring of pipits, which make up two-thirds of the family, is more subdued, streaked brown to buff, a sand-color, and they have thin, pointy bills and medium to long legs. Pipits, unlike wagtails, do not have different seasonal plumage, feathers. The longclaws often have upper plumage, feathers, designed for camouflage (KAM-uh-flaj; colored to blend in with the surroundings) but brilliantly colored plumage underneath. Adult longclaws have dark, necklace-like plumage next to their throats and chins, which are red, orange, or yellow.

Longclaws are named for their long hind claws, which in several species extend twice as long as the foot, or up to 2 inches (5 centimeters). This hind claw is used for perching on grass clumps and walking.

Pipits, longclaws, and wagtails generally have medium to long tails, which they often pump or wag when walking. They are slender, long-bodied, short-necked, energetic, and quick moving. Pipits and wagtails have very similar body types, causing confusion among birdwatchers, but it is generally agreed that pipits have shorter tails than wagtails and a more upright stance on the ground. Longclaws are the most upright of the group, and are often compared to larks in appearance.

GEOGRAPHIC RANGE

Pipits, longclaws, and wagtails are cosmopolitan, meaning they inhabit all the continents of the world. The species may be found from the Arctic tundra all the way to the Antarctic. Most of the birds are migratory and fly south to spend the winter in Africa and Asia. Wagtails are somewhat rare in Australia, but are otherwise widespread. Pipits are also widespread, although only one species occurs in Australia and one in New Guinea. Longclaws are confined to grassland regions of sub-Saharan Africa.

HABITAT

Most species live in open or semi-open country, and many prefer grassy areas such as fields and rocky meadows. Wagtails particularly favor streams, lake edges, rivers, and wetlands, while pipits search out open grasslands from sea level to as high as 17,400 feet (5,300 meters) in the Himalayas. Longclaws also tend to stick to open grasslands and the edges of wetlands.

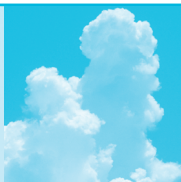
DIET

All members of this family primarily eat insects and their eggs, from tiny midges to locusts and dragonflies. Their favorite foods seem to be beetles, grasshoppers, crickets, ants, wasps, praying mantids, and termites. Some species also eat aquatic insects, seeds, berries, plant parts and carrion, dead and decaying meat.

BEHAVIOR AND REPRODUCTION

Pipit, longclaw, and wagtail species are very territorial, and males aggressively defend their breeding areas. Some even attack their reflections in the hubcaps of cars and windows. Some of the species are monogamous (muh-NAH-guh-mus), having only one mate. They perform courtship displays, behaviors that lead to mating. Some species' displays include presenting females with nesting material or food, while others, especially pipits, stage spectacular aerial flights to attract mates and defend their territory.

This family of birds typically builds cup-shaped nests on the ground in a depression or shallow, scraped-out area. Their neatly formed nests are usually made of grass, stems, and other plant parts and lined with hair, feathers, and other soft materials. The female most often constructs the nest, but males are often in attendance and sometimes help. Pipits and wagtails



TREES ARE FOR THE BIRDS

Almost none of the birds in the Motacillidae family like to perch in trees. They would rather stay on the ground, where they feed and nest, and are experts at evading danger by running swiftly to thick vegetation or rocky outcrops.

generally nest in the grass, although wagtails also nest in nooks and cracks in rocks, stream banks, cliffs, and walls, or under bridges and in hollow tree branches and roots. Longclaws also tend to nest in the grass, but prefer to hide in or at the base of a tussock, a clump of grass, or among leafy plants.

Most wagtails and pipits breed from April to August and may have two or three broods, group of chicks that hatch at the same time, per breeding season. Longclaws breed during or shortly after the rainy season. Female longclaws lay a clutch of two to five green, pale blue, or pink eggs. Wagtails lay three to eight eggs and pipits lay two to nine, depending on latitude and environment. Usually the female

incubates, sits on, the eggs alone, but sometimes the male helps. Both parents care for the fledglings, young birds that have recently grown the feathers needed for flight, which leave the nest after ten to seventeen days.

Many species migrate in flocks and gather into large groups during the nonbreeding season. Wagtails roost together in reed beds and bush- and scrub-vegetated areas. They will vigorously defend good feeding areas from intruders with a display of head-bobbing and jumping into the air. Wagtails may be identified by the characteristic wagging motion of their longish tails. Pipits also do something similar with their tails, but, with a few exceptions, it is not as noticeable. Both species can run very quickly and prefer to crouch in short vegetation to escape the notice of predators, animals that hunt them for food. They are strong fliers, and usually have an undulating, smooth wave-like, flight pattern. The flight of longclaws, on the other hand, is jerky because of their habit of alternating periods of gliding and flapping. Both pipits and longclaws use song-flights as part of their territorial and mating behaviors; wagtails more often sing their simple, melodious songs from the ground or a perch.

When foraging, searching for food, this family of birds uses numerous techniques, including following the plow as a field is plowed, walking while picking from the ground or water surface, darting after insects, putting their heads underwater, flying or hovering to catch winged prey, and poking into vegetation and leaf litter.

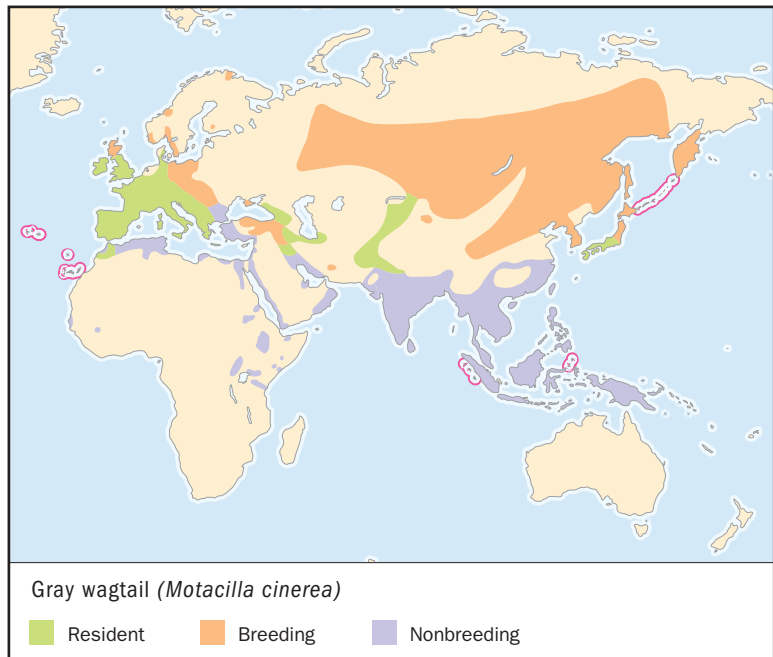
PIPITS, WAGTAILS, LONGCLAWS, AND PEOPLE

People have long been amused by the endearing playfulness of the pipit, which many reports suggest enjoys running in front of people walking on dirt paths and trails and then rising up into the air with a sharp chirp before landing to run again. The family of birds is also beloved by birdwatchers because of their liveliness, energy, and colorfulness. Wagtails especially have special significance for humans, and figure prominently in Japanese, Greek, and African mythology.

CONSERVATION STATUS

With the destruction and degradation of many grassland and wetland, available habitats have decline for Motacillidae populations. As a result, two species have been listed as Endangered, facing a very high risk of extinction, dying out, by the World Conservation Union (IUCN); three species have been designated as Vulnerable, facing a high risk of extinction; and five species are Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



GRAY WAGTAIL *Motacilla cinerea*

Physical characteristics: Gray wagtails range in size from 7.1 to 7.5 inches (18 to 19 centimeters) and in weight from 0.5 to 0.8 ounces (14 to 22 grams). Their gray upper body is offset by bright yellow on their undersides. In summer the males develop a distinctive face pattern of white stripes and a black bib.

Geographic range: This species inhabits areas of northwest Africa and Europe east to Iran, northeast China and Japan, Pakistan, and New Guinea. They migrate for the winter to western Europe, the Middle East, and Africa south to Malawi.

Habitat: Gray wagtails seek out fast-moving, rocky upland rivers and streams, but many occupy territories near canals and on rock-strewn lakeshores with dense foliage and tree cover. In winter, they can also be seen in lowlands near bodies of water, at the coast, and in estuaries (EST-yoo-air-eez), where freshwater and saltwater mix. Some birds spend the winter in towns.



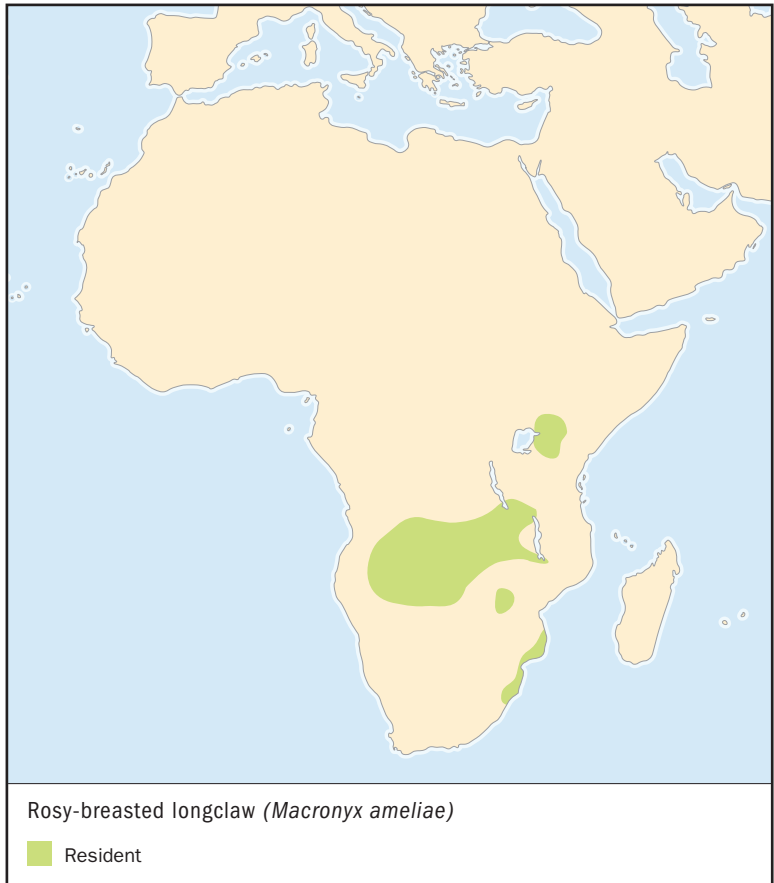
Male and female gray wagtails build the nest and incubate the eggs. The young leave the nest within eleven to seventeen days after hatching. (Hans Reinhard/ Bruce Coleman Inc. Reproduced by permission.)

Diet: Gray wagtails feed mainly on aquatic insects. They also eat small fish and tadpoles. Gray wagtails forage both on the ground and in the water, and occasionally catch airborne insects.

Behavior and reproduction: Gray wagtails are territorial during the breeding season, March through May. Some defend their feeding areas during winter, when they tend to roost in groups. Mating pairs are monogamous, and the male helps to build the nest, usually on a cliff ledge or among tree roots. The female lays three to seven eggs, and both parents then incubate the young for eleven to fourteen days. The young leave the nest within eleven to seventeen days.

Gray wagtails and people: Birdwatchers often confuse this species with the yellow wagtail, but the gray wagtail has a gray, rather than yellowish brown, back; a longer, more strongly patterned black-and-white tail; and a broad, pale wing-bar when in flight.

Conservation status: Gray wagtails are considered Vulnerable due to the destruction of their favored habitats by development and contamination. ■



ROSY-BREASTED LONGCLAW

Macronyx ameliae

Physical characteristics: Rosy-breasted longclaws range in length from 7.5 to 8 inches (19 to 20 centimeters) and in weight from 1.1 to 1.4 ounces (30 to 40 grams). Their mottled, speckled, upperparts include an orange-red patch on the throat with a dark band across their lower throat and a pinkish breast. The hind claw on the foot of this bird is extremely long, making up at least half the length of the foot.

Geographic range: This species inhabits southwestern Kenya and north and southwest Tanzania, as well as parts of Angola, Botswana, Zimbabwe, and the east coast of South Africa.

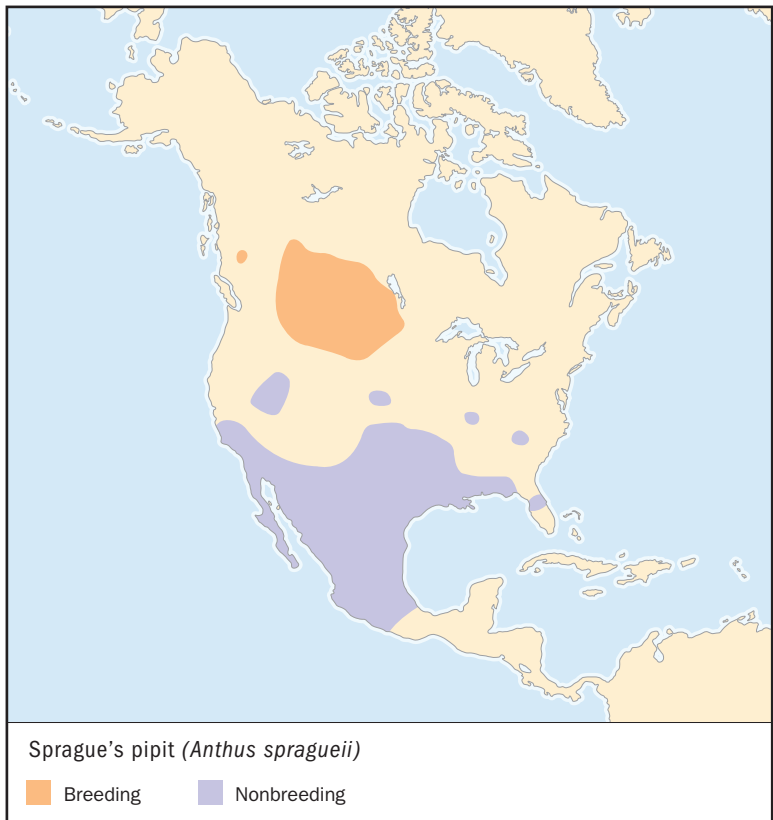
Habitat: Rosy-breasted longclaws live in grasslands with short bunches of vegetation in areas that are permanently or seasonally moist. They often live near marshes or open bodies of water.

Diet: This species eats mainly insects and sometimes small frogs, but it also forages, searches for food, in grass or on the bare ground and occasionally pursues winged insects into the air.

Behavior and reproduction: This shy longclaw is territorial during the breeding season, when the species tends to gather into pairs or family groups. Males usually sing from the tops of bushes or during song-flights. Mating pairs are monogamous and breed mostly during or after seasonal rains. The female builds a cup-shaped nest of grass within a tuft of grass, and lays two to four eggs. The female incubates them for thirteen to fourteen days, and the fledglings leave the nest after sixteen days.

Rosy-breasted longclaws and people: Rosy-breasted longclaws have no special significance to people.

Conservation status: Rosy-breasted longclaws are listed as Near Threatened in South Africa and Mozambique due to loss of coastal habitat. ■



SPRAGUE'S PIPIT

Anthus spragueii

Physical characteristics: Sprague's pipit ranges in length from 6.3 to 7 inches (16 to 18 centimeters) and in weight from 0.8 to 1 ounce (22 to 29 grams). Their pale buff face blends into olive-tan upperparts that are streaked with black and buff. Their undersides are whitish or buff with dark streaks and their outer tail feathers are white. This species has a thin, pale-colored bill, dark eyes, and light-colored legs and feet.

Geographic range: Sprague's pipits occupy areas of Canada, including Saskatchewan, Alberta, Manitoba, and British Columbia, and Montana, North Dakota, and South Dakota in the United States. The bird migrates to Mexico and the southern United States in winter.

Habitat: Sprague's pipits inhabit prairies of tall grass and short-grass plains, where their coloring makes them nearly invisible. While migrating, they forage and rest in plowed fields or harvested hay and wheat fields.

Diet: Sprague's pipits eat mainly insects, but sometimes add seeds to their diet.

Behavior and reproduction: This solitary and secretive pipit species is known for flying high into the air when startled. They are also noted for their beautiful, arcing song-flight during mating season in April and May. Mating pairs are monogamous, and build a cup-shaped nest of grass and stems on the ground where tall grass can fall over the structure. The female lays four to seven eggs, and fledglings leave the nest in ten to eleven days.

Sprague's pipits and people: Naturalist and artist James Audubon named this bird after Isaac Sprague, an artist who came with him on a trip up the Missouri River. The first bird of this species was found in 1843.

Conservation status: Sprague's pipits are listed as Vulnerable. Their populations have declined rapidly due to loss of prairie breeding grounds. Prairies have been taken over by agriculture and by the invasion of aggressive plant species. ■

FOR MORE INFORMATION

Books:

Ali, S., and S. D. Ripley. *Handbook of the Birds of India and Pakistan*. Delhi: Oxford University Press, 1983.

Clements, J. *Birds of the World: A Checklist*. Vista, CA: Ibis Publications, 1991.

Sibley, C. G., and B. L. Monroe. *Distribution and Taxonomy of Birds of the World*. New Haven, CT: Yale University Press, 1990.

Periodicals:

Hall, B. P. "The Taxonomy and Identification of Pipits." *Bulletin of the British Museum of Natural History* 7 (1961): 245–289.



Sprague's pipits breed in tall-grass and short-grass prairies. Their populations have declined rapidly due to loss of prairie breeding grounds to agriculture and the invasion of aggressive plant species. (Illustration by Bruce Worden. Reproduced by permission.)

Web sites:

"The Motacillidae." Gordon's Motacillidae Page. <http://www.earthlife.net/birds/motacillidae.html> (accessed on June 24, 2004).

National Wildlife Federation. "Sprague's Pipit." eNature.com. <http://www.enature.com/fieldguide/showSpeciesSH.asp?curGroupID=1&shapeID=961&curPageNum=147&recnum=BD0301> (accessed on June 24, 2004).

Olliver, Narena. "Puhoihoi, the New Zealand Pipit." New Zealand Birds Gallery. <http://www.nzbirds.com/NZPipit.html> (accessed on June 24, 2004).

"Pipits & wagtails: Motacillidae." Bird Families of the World. <http://www.montereybay.com/creagrus/pipits.html> (accessed on June 24, 2004).

"Pipits and Wagtails: Grey Wagtail *Motacilla cinerea*." Bird Guides. http://www.birdguides.com/html/vidlib/species/motacilla_cinerea.htm (accessed on June 24, 2004).

"Pipits, wagtails, longclaws." Birds of the World. <http://www.eeb.cornell.edu/winkler/botw/motacillidae.html> (accessed on June 24, 2004).

"Sprague's Pipit." Patuxent Wildlife Research Center. <http://www.mbr-pwrc.usgs.gov/Infocenter/i7000id.html> (accessed on June 24, 2004).

family CHAPTER

CUCKOO-SHRIKES

Campephagidae

Class: Aves

Order: Passeriformes

Family: Campephagidae

Number of species: 74 species

PHYSICAL CHARACTERISTICS

Cuckoo-shrikes are small- to medium-sized birds, ranging in length from 5.5 to 14.5 inches (14 to 37 centimeters) and in weight from 0.2 to 6.3 ounces (6 to 180 grams). Some of the seventy-four species are very brightly colored, like the fiery minivet, while others are drab to protect them from predators (animals that hunt them for food), like the Mauritius cuckoo-shrike. Usually the females of this bird family are much less colorful than the males. In general, cuckoo-shrikes have broad-based bills that are slightly hooked and notched, and stiff, bristle-like feathers around their nostrils. Wings are pointed and long, and their tails are fairly long and rounded. Most cuckoo-shrikes have very stiff, erect feathers on their backs and rumps that scientists think may act as a means of defense because they detach easily.

GEOGRAPHIC RANGE

Cuckoo-shrikes are found only in middle and southern Africa, south and Southeast Asia, Australasia, and the western Pacific Islands.

HABITAT

Except for the ground cuckoo-shrike species, cuckoo-shrikes are either mostly or exclusively tree dwellers. In fact, many of the seventy-four species can be found mainly in the canopies, upper layer of a forest, of tall trees. They nest, breed, and forage in a variety of places, but all have trees in common. Their habitats can include swampy, humid, or dry forests, woodlands, savannas, and scrubland. Some species select habitat only in

phylum

class

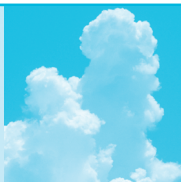
subclass

order

monotypic order

suborder

▲ family



HOMELESS BIRDS

Fiery minivets used to live in Singapore, but they are now extinct, no longer exist, there. The island nation cleared so many of its native forests that the fiery minivet and many other bird species either died or migrated to more favorable environments elsewhere.

the interior of forests, but others find homes at the edges of forests, in secondary growth (regrown forests), in gardens of urban or suburban areas, or among coastal vegetation.

DIET

Cuckoo-shrikes mostly eat insects such as caterpillars and some fruit, but some species also eat seeds and plant parts.

BEHAVIOR AND REPRODUCTION

Cuckoo-shrikes are usually monogamous (muh-NAH-guh-mus), have only one mate, and most have permanent territories. Ornithologists, scientists that study birds, know very little about the breeding seasons

of cuckoo-shrikes, but they have observed that, except for the white-winged triller and the ground cuckoo-shrike, most species breed during or just after the rainy season and nest solitarily, alone. Males of some of the bigger species use a courtship display, behaviors that lead to mating, in which they alternately lift each wing while calling loudly. In many of the cuckoo-shrike species, male and female together build a small, shallow, cup-shaped nest of small twigs, grasses, moss, lichens (LIE-kenz), roots, and bark. They often bind the nest with spider webs and line it with them as well. The parents typically place the nest on a high horizontal or forked branch of a tree. The female lays a clutch of one to five eggs, but usually two or three. The males of some species help to incubate the eggs, but most often this is the female's duty. Incubation of the eggs takes fourteen to twenty-five days, but in many species the process can take three or more weeks. Both parents care for the young, which leave the nest after thirteen to twenty-four days.

When foraging, cuckoo-shrikes generally poke among the foliage, leaves, of trees and bushes, but some also explore trunks and branches for prey, animals hunted for food. The birds often pursue insects into the air, and occasionally pick insects off the ground.

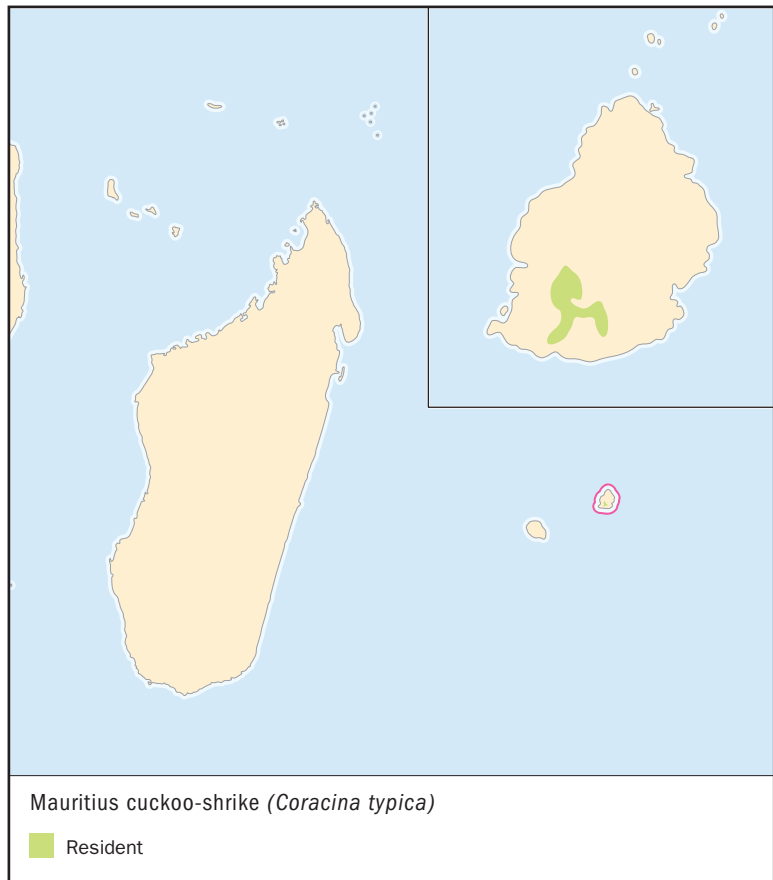
CUCKOO-SHRIKES AND PEOPLE

Cuckoo-shrikes do not have a special significance to humans.

CONSERVATION STATUS

Four cuckoo-shrike species are listed as Vulnerable, facing a high risk of extinction in the wild, or Endangered, facing a very high risk of extinction. These species include the Ghana cuckoo-shrike, Réunion cuckoo-shrike, Mauritius cuckoo-shrike, and white-winged cuckoo-shrike. However, due to habitat loss and degradation, about a dozen other species have Near Threatened status, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



MAURITIUS CUCKOO-SHRIKE *Coracina typica*

Physical characteristics: Mauritius cuckoo-shrikes measure 8.7 inches (22 centimeters) long and males weigh about 1.5 ounces (43 grams). Males have gray upper bodies, dull white undersides and blackish wings. Females have orange-brown upperparts and reddish orange undersides.

Geographic range: Mauritius cuckoo-shrikes live only in areas of southern Mauritius, an island off the southeast coast of Africa.

Habitat: This species of cuckoo-shrike prefers the canopies of Mauritius's moist tropical evergreen forests, especially at elevations

above 1,500 feet (460 meters). However, they will also use nearby forest that has been degraded or altered by humans. Many of the mating pairs may be found in remains of native forests around Black River Gorges and in the Bel Ombre Forest.

Diet: Mauritius cuckoo-shrikes eat mostly large arthropods, invertebrate animals (animals without backbones) with segmented bodies, such as caterpillars, stick bugs, beetles, and praying mantids. They occasionally prey on small reptiles such as geckos and even steal the eggs of other birds, particularly the pink pigeon. The birds find their food mainly by searching through vegetation.

Behavior and reproduction: Generally secretive and solitary birds, Mauritius cuckoo-shrikes live alone or with their mate. Males are territorial even outside of breeding season, which occurs during the rainy period from September to March. Both sexes work together to build a shallow, cup-shaped nest made of fine twigs, lichen, and spider webs, which they place high on a horizontal tree branch. The female lays a clutch of two eggs, which both parents incubate for twenty-four to twenty-five days. Rat predation is a major danger for chicks. Males sing with a melodic trill and have a harsh species-specific call-note.

Mauritius cuckoo-shrikes and people: Since 1975, many residents of Mauritius have helped to stop the decline of the bird's population through support of programs to restore native ecosystems and habitats.

Conservation status: In 1970, the population of Mauritius cuckoo-shrikes was estimated at about 200 pairs, but by 2000, thanks to conservation efforts, that number had increased to between 300 and 350 pairs. Nevertheless, the species is still considered Vulnerable because of continued habitat loss and destruction in its very small range. ■



Generally secretive and solitary birds, Mauritius cuckoo-shrikes live alone or with their mate. Males and females build a nest and incubate their eggs. (Illustration by Emily Damstra. Reproduced by permission.)



FIERY MINIVET

Pericrocotus igneus

Physical characteristics: One of the smallest species in the Campephagidae family, the fiery minivet was first recognized as a separate species in 1846 during an expedition to the Moluccas, a group of islands in Indonesia. They range in length from 6 to 6.5 inches (15 to 16.5 centimeters) and typically weigh between 0.5 to 0.6 ounces (14 to 16 grams). Males have black upperparts and throats, with vivid red breast, belly, rump, and outer tail feathers. Females are more subtly colored, with gray upperparts, yellow undersides, orange rumps, and black tails. The bird has a distinct, rising call of “swee-eet.”

Geographic range: Fiery minivets are Asian birds, occupying southern Myanmar, southern Thailand, and parts of Malaysia and Brunei, as well as the Indonesian islands of Sumatra and Borneo and the Palawan Province islands of the Philippines.

Habitat: This species typically makes its home in the canopies of forests and along the forest edges, but it will also occupy pine plantations and casuarinas, an Australian evergreen, groves. Many of the birds may be found in lowlands, but it is also commonly sighted in the sub-montane slopes and montane forests of Sumatra at altitudes up to 8,900 feet (2,700 meters). Another favored habitat is coastal mangrove swamps.

Diet: Although little is known about the feeding habits of fiery minivets, ornithologists presume that the species, like birds in the rest of the family, eats primarily insects, particularly moths and caterpillars. They forage in the canopies of trees where they live.

Behavior and reproduction: Sociable and energetic, fiery minivets are frequent participants in what scientists call “mixed-species bird parties,” groups that contain a number of bird species. They are believed to be monogamous, with mated pairs working together to build a cup-shaped nest of fine plant parts, spider webs, and lichens, fungus, that they place high in a tree. This species breeds in Palawan’s dry season of December and in Malaysia’s rainy season that starts in May. The female usually lays two eggs.

Fiery minivets and people: The species’ beautiful coloring makes it a favorite of birdwatchers.

Conservation status: While extensive and ongoing destruction of forests in this region of Asia presents a continuing threat to fiery minivets and many other birds, the species’ use of sub-montane slopes and second-growth forests leads scientists to conclude that it is not immediately threatened. Fiery minivets are common in Palawan and Sumatra, although somewhat rare in Thailand. ■



Fiery minivets are frequent participants in what scientists call “mixed-species bird parties,” groups that contain a number of bird species. (Illustration by Emily Damstra. Reproduced by permission.)

FOR MORE INFORMATION

Books:

Sibley, C. G., and B. L. Monroe. *Distribution and Taxonomy of Birds of the World*. New Haven, CT: Yale University Press, 1990.

Stattersfield, A. J., and D. R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

Periodicals:

Ripley, S. D. "Notes on the Genus *Coracina*." *Auk* 58 (1941): 381–395.

Web sites:

"Fiery Minivet." BirdLife International. http://www.birdlife.net/datazone/search/species_search.html?action=SpchTMDetails.asp&sid=5973&m=0 (accessed on June 13, 2004).

"Cuckoo-shrike." The Encyclopedia Mauritiana. <http://www.encyclopedia.mu/Nature/Fauna/Birds/Endemic/Cuckoo-shrike.htm> (accessed on June 25, 2004).

"Fiery Minivet." *The Red Data Book: Threatened Birds of Asia*. Online at http://www.rdb.or.id/view_html.php?id=543&op=periigne (accessed on June 25, 2004).

family CHAPTER

BULBULS Pycnonotidae

Class: Aves

Order: Passeriformes

Family: Pycnonotidae

Number of species: 131 species

PHYSICAL CHARACTERISTICS

Bulbuls have short, concave (curved in) wings. They have long tails for the size of their bodies. Most of them have tails that are square or rounded. Bulbuls have slender, notched bills. Most bulbuls have stiff bristles near the edges of the beak opening. Their nostrils are either oval or long. Bulbuls' toes and legs are weak and short. Some species are noted for their full and showy crest on their head.

Bulbuls are not noted for their bright colors. The basic colors are dull brown, olive green, and gray, though some of the species do have markings such as yellow underparts, or faces with red, yellow, orange, or white plumage. These brighter colors are only on the throat, undertails, head, or ears. The parts on the upper portions are usually the same color or shades of color. In several species the tail is either rust-red or reddish brown. The size of the various species varies, and a bulbul can range from 3.6 to 11.5 inches (9.3 to 29 centimeters). They can weigh between 0.5 and 2 ounces (14 to 57 grams). The male and female birds vary little in appearance, but the female is usually smaller.

GEOGRAPHIC RANGE

Bulbuls can be found throughout tropical southern Asia in the forest and wooded areas of Africa, particularly in Kenya, and on Madagascar, the Indian Ocean islands, India, Sri Lanka, southern China, the Philippines, Indonesia, and Japan. The common bulbul is one of the most common birds of Africa. An estimated fifty-two species reside in Africa, and China has approximately twenty-seven species.

phylum

class

subclass

order

monotypic order

suborder

▲ family

The red-whiskered bulbul was introduced to Florida in 1960, and by 1973 there were five hundred birds in an increasing population that expanded southward. By the late 1960s, the same species was established in Los Angeles County, California. The red-whiskered bulbul and the red-vented bulbul were both introduced to Oahu, Hawaii, in the late 1960s. The population of both birds is large there.

HABITAT

Bulbuls are arboreal, living in trees. They live in a variety of areas, including forests, open woodlands, and even gardens created by humans. Some African and Indonesian species live in the interior of the forest. Some like open areas just outside the forest, or forest clearings. Species that have adapted to drier habitats can find homes in cultivated areas. Other bulbuls like to live near water and can be found near rivers or forest streams. The African red-eyed bulbul has adapted to a drier climate and can be found in such areas as savanna (grassland with few trees), semiarid scrub, and bushy hillsides. The common bulbul, also referred to as the African bulbul, is spread throughout Africa, making it the most common of the bulbuls on that continent.

DIET

Bulbuls tend to be omnivores, eating both plants and animals. The diet across the various species ranges from fruits and berries to insects and other arthropods (invertebrates, animals without backbones, with jointed bodies), in addition to small vertebrates, animals with a backbone, including frogs, snakes, and lizards. Some bulbuls have very specific diets; the green-tailed bristle-bill eats only insects in a very specific area, which is made up of a narrow horizontal layer of forest vegetation.

BEHAVIOR AND REPRODUCTION

Bulbuls that are found in forests tend to be secretive. By contrast, those found in garden settings or parks can be bold and gregarious, social. Bulbuls can be very social and are found in groups with their own species and with other species. The spotted greenbul, for instance, is extremely gregarious and travels in a group with other greenbuls in flocks that might have from five to fifty birds. This group never stays too long in one place, even when food is plentiful. Other species that are social, the striated bulbul and the yellow-streaked bulbul, also live in active flocks.

Many bulbuls show aggressive behavior toward members of their own species in addition to those of other species.

Most bulbuls have distinctive singing voices—from chattering to whistles. The chance of hearing a bulbul in a tropical forest is high, and they are usually heard before they are seen. Though few are musical, some bulbuls have beautiful and melodious songs, including the yellow-spotted nicator in West Africa, and the yellow-crowned bulbul, found in Borneo. The greenbul is noted for its constant singing throughout the day, all year long.

Bulbuls as a whole are not migratory, moving to other places seasonally, though some species that are adapted to the cooler climates and temperate zones would be considered partly migratory. The black bulbul, for instance, migrates in flocks of several hundred birds at a time to southern China in the winter months. Brown-eared bulbuls that have been banded and recaptured have been shown to migrate within the Japanese islands. Other bulbuls are sedentary, stay in one place, and might move only a few hundred yards (meters) over a period of several years. Most bulbuls live and travel in pairs, or in family groups, complete with its juvenile members.

Bulbul reproduction can vary. It depends on the climate and region. Breeding can be connected to rainfall, with some species breeding before and after the monsoon, rainy, season. Some species breed year-round, even through the rainy seasons. Most are monogamous (muh-NAH-guh-mus; having only one mating partner) and territorial. Mating rituals vary as well, with some species chasing each other while calling out in a soft tone. In most species, both parents usually work on the nest, though in some species it is only the female. Bulbuls generally have a clutch size (number of eggs in the nest) of two, with three for the yellow-whiskered bulbul and one for the West African nicator. Some of the Asian species can have clutches of four or five. The incubation period, time spent sitting on the nest before hatching, varies for the different species but can last from eleven to fourteen days.

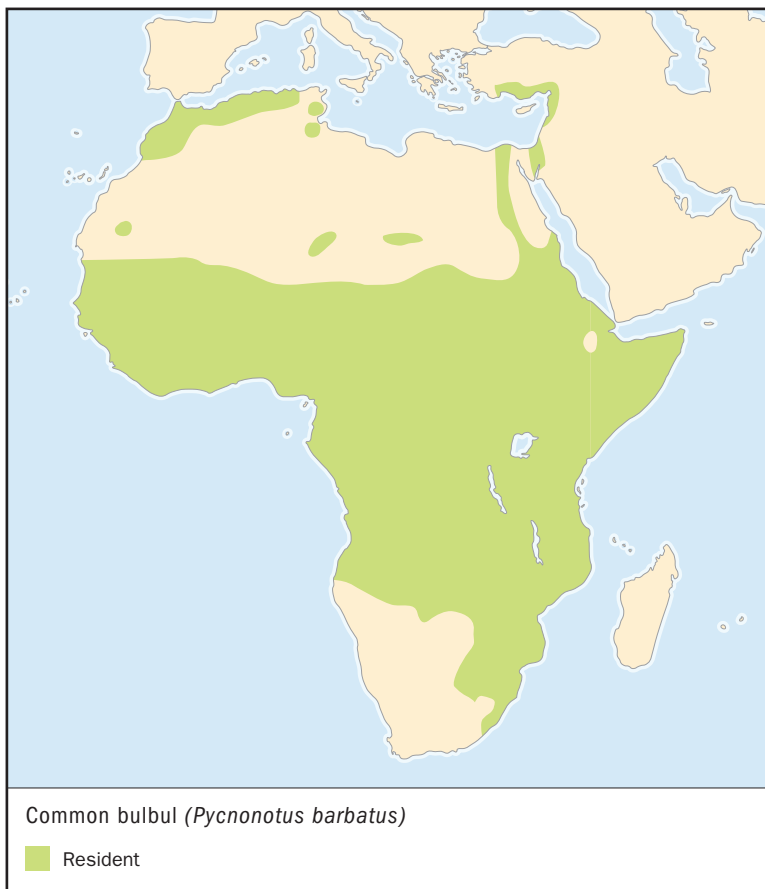
BULBULS AND PEOPLE

People have been listening to the song and chatter of bulbuls for centuries. They are often prized as pet birds due to their singing. Some of these birds have had roles in folk tales where they live. In Ghana, West Africa, for instance, natives refer to the swamp greenbul as the “talky-talky bird.” Children will not

eat the meat of the bird due to the superstition that they will never stop talking if they do. Due to both abuses and diminishing populations because of capture for the bird market, the government of Thailand has required permits for owning the birds since 1992—owning some of these species is considered a sign of wealth and prestige in Thailand. Some have been used in bird fights. In 2001, five hundred captured bulbuls were found in passage to the south of Thailand.

CONSERVATION STATUS

Two species are considered Endangered, facing a very high risk of extinction, and five have been described as Vulnerable, facing a high risk of extinction. One of these, the streak-breasted bulbul, is native to four different Philippine islands and has lost much of its habitat. Even though it does live in open areas, under some circumstances forests also appear to be necessary for its survival. In addition to protecting habitat, further study of the birds' behavior is necessary so we can fully understand what they need to continue to survive.



COMMON BULBUL

Pycnonotus barbatus

SPECIES ACCOUNTS

Physical characteristics: The common bulbul is normally 3.6 to 4.2 inches (9.1 to 11 centimeters), and can weigh from 0.8 to 2.1 ounces (23 to 60 grams). They tend to be the size of thrushes with a dark crest on the head, dark eye-ring, and a black bill. Upperparts tend to be grayish brown, with a similarly colored breast, a white belly, and a white or yellow undertail. Both sexes are similar in appearance, though the female is slightly smaller. Young birds are duller in color than adults, and have rusty tones.

Geographic range: The common bulbul can be found in Africa south of 20° north latitude, except in the dry southwestern regions

of the continent and near the Cape of Good Hope on Africa's southern tip.

Habitat: The common bulbul thrives in wooded or bush areas, especially those near water.

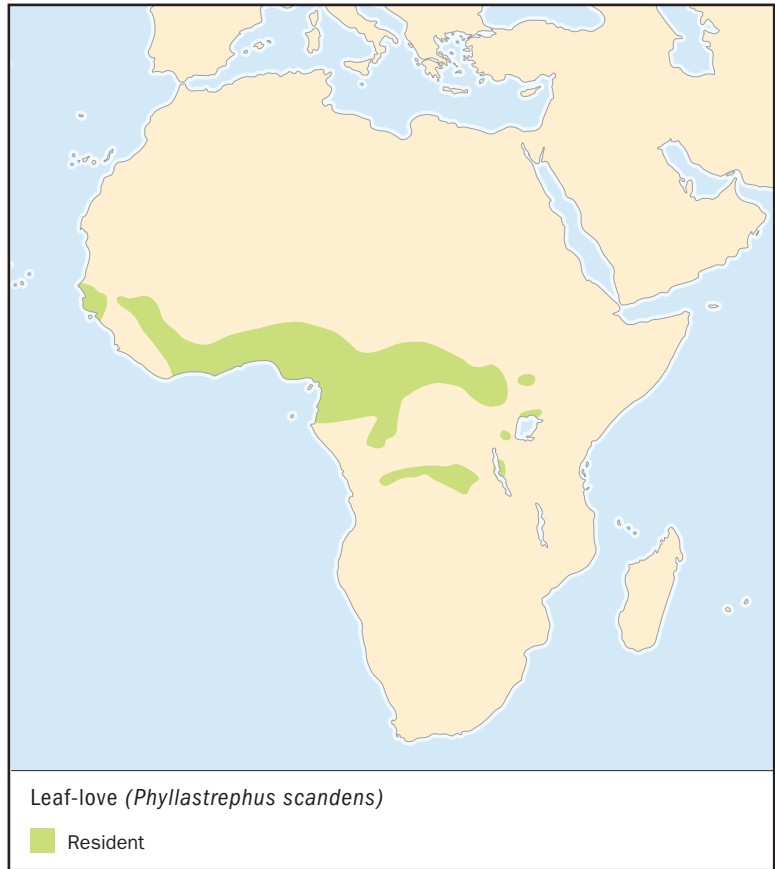
Diet: Common bulbuls are omnivores, eating various wild and cultivated fruits, flowers, termites, and other insects, in addition to small lizards.

Behavior and reproduction: The common bulbul is monogamous and has been observed to mate for life. Birds pair through a preening

ceremony and duet singing. Two to five eggs are laid in a shallow, thin, cup-like nest in a bush or shrub, and the bird lays eggs twice in a season. The incubation period is twelve to fourteen days, most often with only the female sitting on the eggs. Young are cared for by both parents.

Common bulbuls and people: The common bulbul has no particular significance to humans.

Conservation status: This species is not threatened and is plentiful over a wide area. The common bulbul is Kenya's most common bird. ■



LEAF-LOVE

Phyllastrephus scandens

Physical characteristics: The leaf-love species of bulbul generally has a gray head, with a dull gray-olive back, and a bright, rusty tail. The feathers of the tail and rump are full, and the nape of the neck and area near the bill has a light cover of black bristles. The belly of the bird is colored yellow with creamy white undertones. Both sexes are similar. The juvenile bird is also olive-gray with a rusty tone, the chin and the underparts are white, and the undertail is a pale rust.

Leaf-love bulbuls are usually about 5.9 inches (15 centimeters) in length, with a weight range of 1.1 to 1.9 ounces (33 to 53 grams).

Geographic range: Leaf-loves are found in east central Africa, as well as Sudan, western Gambia, Senegal, Guinea, Sierra Leone, Liberia, Mali, Ivory Coast, Ghana, Togo, Nigeria, Cameroon, Gabon, southern Congo, Central African Republic, and Democratic Republic of the Congo.

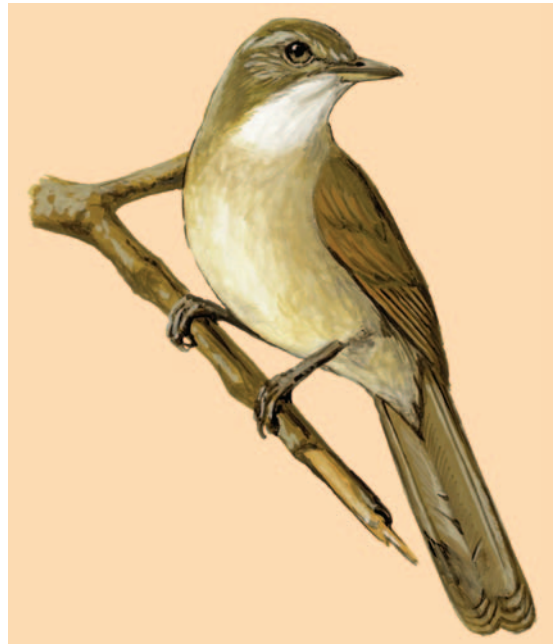
Habitat: Leaf-love bulbuls live in forests and in the brush and shrub undergrowth, and small trees near water.

Diet: The leaf-love bulbuls are omnivores and scout for food in trees, on the ground, and in any vegetation, feeding on insects and their larvae, small snails, seeds, and berries.

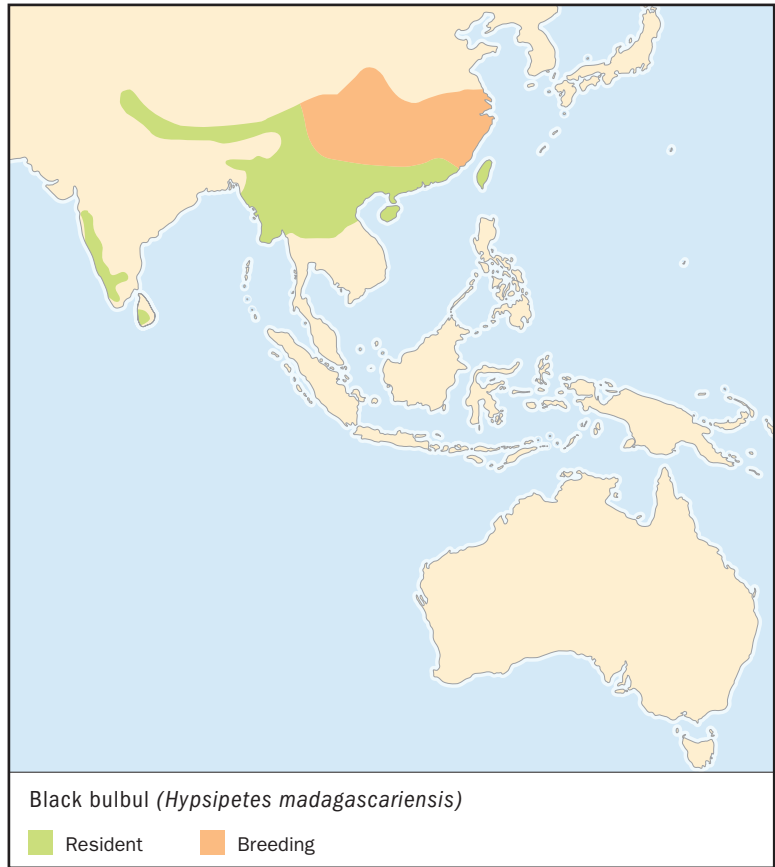
Behavior and reproduction: Leaf-loves are territorial in their habits during breeding season. The nest, which appears as almost being too small, is cup-shaped and suspended in twigs by cobwebs. The female incubates the eggs alone.

Leaf-loves and people: Leaf-loves have no special significance to humans.

Conservation status: The leaf-love bulbul is common throughout its native area, and is not threatened even though its distribution is fragmented. ■



Leaf-love bulbuls scout for food in trees, on the ground, and in any vegetation. (Illustration by Brian Cressman. Reproduced by permission.)



BLACK BULBUL

Hypsipetes madagascariensis

Physical characteristics: The black bulbul is approximately 7.8 to 10 inches in length (20 to 25.4 centimeters). The bird can be slate gray to shimmering black in color, with a crest that is less than full, but fluffy, and has a forked tail. The black bulbul has bright red legs and feet. Variations among the species include some black bulbuls that have a white head. The birds that live in the western regions of the distribution have plumage that is grayer. Both sexes are similar. The juvenile bird lacks a crest or has one that is not as defined or pronounced, with a white-colored throat and plumage that is grayish brown.

Geographic range: Black bulbuls are native throughout Madagascar (from which they have received their scientific name, *madagascariensis*), the islands of the Indian Ocean, and the mountainous areas of Pakistan, India, Bangladesh, Sri Lanka, India, southern China, Taiwan, Hainan, Myanmar, and Indochina.

Habitat: Black bulbuls prefer tall forests with broad-leaf trees as well as the shade trees of plantations, and tend to live in the mountainous regions of tropical south Asia.

Diet: The black bulbuls are omnivores that feed on seeds and insects.

Behavior and reproduction: Black bulbuls are extremely social, often traveling in large, noisy flocks of several hundred; but they are also known to gather in small groups, also noisy and social. They have a variety of screeching noises, are swift in flight, and are one of the few species of bulbuls to migrate.

Black bulbuls breed from March through September, and build their nest high in the trees, and sometimes in the brush. Each clutch has two to four eggs.

Black bulbuls and people: Black bulbuls have no special significance to humans.

Conservation status: The black bulbul shows no signs of extinction and is common in its native areas. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. Smithsonian Books. London and New York: Dorling Kindersley Publishing, 2001.

Bennun, Leon, and Peter Njoroge. *Important Birds of Kenya*. Bedfordshire, U.K.: Royal Society for the Protection of Birds, 1999.

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Lewis, Adrian, and Derek Pomeroy. *A Bird Atlas of Kenya*. Lisse, Netherlands: Swets and Zeitlinger, 1988.

Simpson, Ken, and Nicolas Day. *The Birds of Australia, A Book of Identification*. Dover, NH: Tanager Books, 1984.

Williams, John George, and Norman Arlott. *The Collins Field Guide to the Birds of East Africa*. Brattleboro, VT: Stephen Greene Press, 1992.

Zimmerman, Dale A., Donald A. Turner, and David J. Pearson. *Birds of Kenya and Northern Tanzania*. Princeton, NJ: Princeton University Press, 1999.

Web sites:

“Black Bulbul.” Science Daily. <http://www.sciencedaily.com> (accessed on May 5, 2004).

“Leaf-love.” Science Daily. <http://www.sciencedaily.com> (accessed on May 5, 2004).

“*Pycnonotus barbatus*.” Kenya Birds. <http://www.kenyabirds.org.uk> (accessed on May 5, 2004).

family CHAPTER

FAIRY BLUEBIRDS AND LEAFBIRDS

Irenidae

Class: Aves

Order: Passeriformes

Family: Irenidae

Number of species: 14 species

PHYSICAL CHARACTERISTICS

Fairy bluebirds and leafbirds range in length from about 6 to 11 inches (13 to 30 centimeters), and weigh, on average, about 0.5 to 2.8 ounces (13 to 80 grams). Their toes are relatively small for their size, and their ankle bones are short and thick. The birds' bills are fairly heavy. The fairy bluebird adult males are the color of an ultramarine to a turquoise, or cobalt blue, with the color going down over the lower tail. The rest of the bird is the color of black velvet or deep blue. Females are duller in color than the males, as are the juvenile birds. However, the juveniles differ from the females due to their lack of a bright red iris. In leafbirds, both male and female have very bright green plumage, feathers. Fairy bluebirds and leafbirds are similar to bulbuls in that many of their feathers are shed when they are handled.

The four iora species have patterns with various shades of yellow and dull green, and black in some males. All but the great iora have dark wings contrasted with white bars in both males and females. The eyes are pale gray. Their beaks are black, thin, and not curved. Nonbreeding male ioras have dull plumage.

Fairy bluebirds and leafbirds share two characteristics with bulbuls. Those similarities are that the upper tail coverts, feathers at the base of the tail, are long and fluffy, and the patch of hair-like feathers that have no veins on the nape of the neck. They also share the vocal ability that most bulbuls have.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

GEOGRAPHIC RANGE

Fairy bluebirds and leafbirds can be found throughout Asia, in southern China, Indochina, the Malay Peninsula, the Greater Sundas, and in India. Some species have limited distribution such as the Marshall's iora that is found only in tropical Pakistan and northwestern India, or the yellow-throated leafbird that can be found only on the western Philippine island of Palawan and some of its tiny satellite islands. The Philippines mark the eastern boundary for these birds.

HABITAT

None of the fairy bluebirds live on the ground or in the undergrowth, but instead strictly inhabit tree canopies of deciduous or coniferous forests, in the higher branches. Some leafbirds do visit gardens regularly. The ioras have a wider range of dwellings and might be found on beaches or mangrove swamps to secondary forests. They are also found in gardens or orchards.

DIET

In general, the birds of this family are fruit eaters and nectar-feeders, as in the case of the leafbird, though they also eat insects and spiders, as well as eat small fruits such as the oriental mistletoes. Ioras are known to eat fruit, but tend to hunt in pairs for caterpillars, moths, and spiders, moving quickly from branch to branch, and sometimes even hanging upside down in order to find their prey or feed.

BEHAVIOR AND REPRODUCTION

Both ioras and fairy bluebirds roam in flocks. As a rule, they do so with other species. Fairy bluebirds associate with birds that include feeding fruit pigeons and bulbuls. Ioras associate with those of a similar size that are also insect eaters. Leafbirds are also nomadic except during the breeding season, but usually travel in smaller groups or pairs. They are known for their aggression toward other birds and are gifted with the ability to mimic other species.

All three of these groups of birds are monogamous (muh-NAH-guh-mus), meaning that they have only one partner during the breeding season, and also exercise territorial rights during that time. They exhibit differences in the months they breed, varying with location. The common iora nests from May to September, Marshall's iora only breeds from June to August in the drier ranges of Pakistan and northwest India.

Ioras have a mating ritual during which the male becomes a brightly colored vision in contrast to his normal state of being inconspicuous. The male begins by chasing the female, then perches with his wings lowered and proceeds to fluff up his lower back feathers. The male then lifts the tail and gives its call, which consists of hissing sounds. It jumps back and forth above its perch with the white back feathers fluffed, and then goes back to its perch slowly in a spiral while making a sound like a cricket or tree frog.

Fairy bluebirds build their nests at least 16.5 feet (5 meters) up in the forks of trees and the lower canopy. It is a rough sort of platform made of long, thick twigs hidden with a cover of roots and moss, with an open cup formed in the middle for the eggs. The clutch is two or three eggs that are greenish white to olive-gray, with brown splotches, and a grayish purple often coming together into a cap over the wide end of the egg. Observations have indicated that only the female builds the nest, though both male and female parents feed the young.

FAIRY BLUEBIRDS, LEAFBIRDS, AND PEOPLE

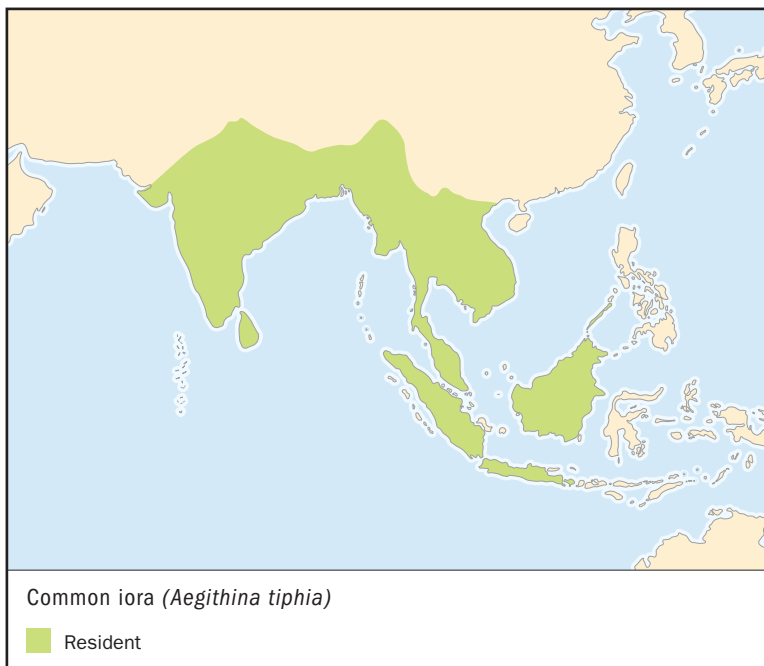
Ioras provide humans with a natural form of insect control. Leafbirds pollinate flowering trees, and spread the seeds of the parasitic oriental mistletoe between trees.

Leafbirds are well-represented in art, with the Chinese depicting them since at least the fifteenth century. Many other varieties of this family have been prized as well for their beauty and were shipped commercially in the late nineteenth and early twentieth centuries. Before World War II, India was the largest supplier of these birds. By the 1950s and 1960s, Thailand, and then Indonesia were major sources. By the 1990s, China exported them until a ban was imposed on caged birds in 2001. Indonesia then played the key role in their export. Their tendency to fight with other birds has made them unsuitable for mixed groups of species.

CONSERVATION STATUS

The green iroa, Sumatran blue-masked leafbird, and lesser green leafbird are listed as Near Threatened, in danger of becoming threatened with extinction. The Philippine leafbird is considered Vulnerable, facing a high risk of extinction, due to forest destruction resulting in loss of habitat. In general, many of the species have suffered some loss of habitat, though minimal, and with a wide distribution they are not threatened on a global level.

SPECIES ACCOUNTS



COMMON IORA *Aegithina tiphia*

Physical characteristics: The common iora ranges in length from 5.5 to 6 inches (13 to 17 centimeters), and has a weight that averages about 0.5 ounces (13.5 grams). The females are olive-green on their upperparts, with dull yellow underparts, foreheads, and eye-brows, with olive-green crowns. The males have dark green to black upperparts, very bright yellow underparts, black wings with white bars, dark tails, and black crowns.

Geographic range: The common iora can be found throughout almost the entire Indian subcontinent, Sri Lanka, southern Yunnan and southwestern Guanxi in China, all of Myanmar, Indochina, and the Malay Peninsula, Sumatra, Java, Borneo, and Palawan.

Habitat: The common iora dwells in open woodlands, secondary forests, gardens, orchards, mangroves, and beach forests.

Diet: Common ioras are omnivores, but have a diet consisting of arthropods which includes spiders, moths, caterpillars, and other

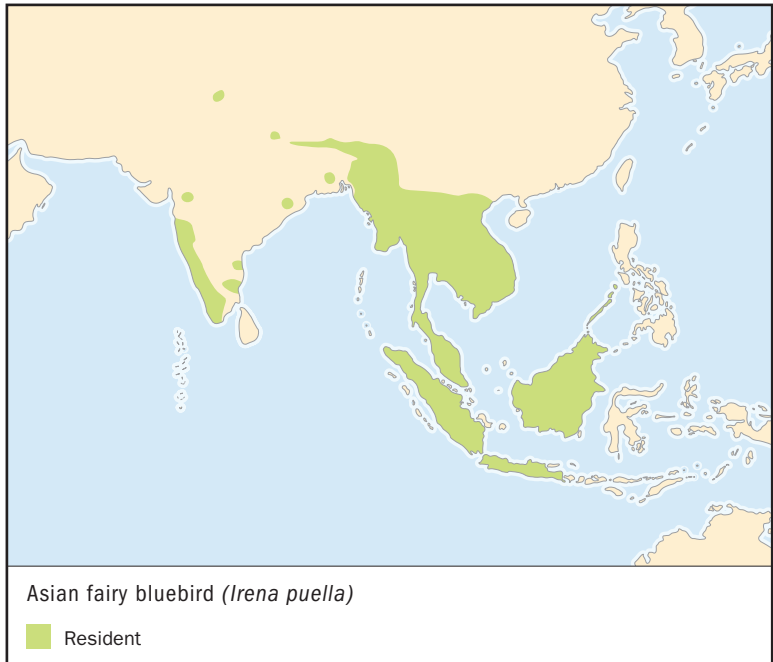
similar insects that can be found on leaves. They also eat some fruit.

Behavior and reproduction: When they are not breeding, common ioras tend to travel in small flocks, or pairs, as they continually hunt for their food. Contact among the birds is made through vocalizing often. Their songs and whistles are both distinctive as well as pleasant.

The common iora is monogamous. The male has specific behaviors for courtship as described in the earlier section on the family of fairy bluebirds, leaping 3.3 to 6.6 feet (1 to 2 meters) above its perch, then gliding down with erect feathers, and taking on the appearance of a sphere-like shape. The nest is deep and cup-shaped, with a clutch of two to four eggs that are white with a pink tint and brown or purple-colored blotches.

Common ioras and people: The common iora provides insect control in fruit orchards by feeding on caterpillars and other harmful insects.

Conservation status: This species is not threatened. Due to the creation of gardens and orchards, it is most likely that the common iora has widened its habitat range. ■



ASIAN FAIRY BLUEBIRD

Irena puella

Physical characteristics: The Asian fairy bluebird has a sturdy build, with a length of 10 inches, (25 centimeters), and a weight of 2.5 ounces (75 grams). The male has black under parts, wings, and tail, with ultramarine blue upperparts and feathers under the tail. Females are dark turquoise-blue all over with black flight feathers. Both male and female have red eyes.

Geographic range: The Asian fairy bluebird can be found on the coast of southern India, in the eastern Himalayas, Myanmar, Yunnan, Indochina, Malay Peninsula, Java, Sumatra, Borneo, and the western Philippine island of Palawan.

Habitat: Asian fairy bluebirds can be found living primarily in primary and tall secondary forests.

Diet: Asian fairy bluebirds are omnivores, eating insects and nectar. Their primary source of food is fruit, especially preferring figs.

Behavior and reproduction: These birds can be found in flocks of up to thirty birds, and dwell mostly in the upper parts of the forest. They will bathe in streams, only to return to ascend again, returning to the higher locations. Asian fairy bluebirds are known for their melodious whistle.

Asian fairy bluebirds and people: These birds have no special significance to humans.

Conservation status: Asian fairy bluebirds are not threatened due to their broad distribution. Some populations are at risk, however, because of forest destruction in some areas. ■

FOR MORE INFORMATION

Books:

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Web sites:

“Fairy-bluebirds (Irenidae).” Monterey Bay. <http://www.montereybay.com/creagrus/fairy-bluebirds.html> (accessed on May 5, 2004).

“Fairy Bluebird.” Science Daily. <http://www.sciencedaily.com> (accessed on May 5, 2004).

“Birds of the National Zoo, Fairy Bluebird.” Smithsonian National Zoological Park. <http://natzoo.si.edu/Animals/Birds/> (accessed on May 5, 2004).

SHRIKES

Laniidae

Class: Aves

Order: Passeriformes

Family: Laniidae

Number of species: 74 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Shrikes range in size from 5.7 to 19.6 inches (14.5 to 50 centimeters) and can weigh anywhere from 0.6 to 3.52 ounces (18 to 100 grams). They are predatory birds, living by feeding on other animals, and they usually have sharply hooked, raptor-like beaks and powerful legs. With so many species in the family, shrikes' coloring varies widely. Some are vividly colored in greens, reds, and yellows, such as the yellow-crowned gonolek and the gray-headed bush shrike, but many others are dramatically patterned with black masks and wing bars, showing pure white underneath and deep black, gray, or russet, a reddish brown, upperparts. The helmet shrikes are known for their bristly feathers on their forehead and, usually, colored wattles, fleshy folds of skin, around their eyes. Except for a few species, including the red-backed shrike, males and females of this family do not look very different. Young shrikes tend to be brown and have many wavy lines and patterns throughout their plumage, feathers.

GEOGRAPHIC RANGE

Shrikes appear throughout the world in Europe, Asia, Africa, North America, Russia, and New Guinea. Virtually all of the bush-shrike species live in Africa, while the helmet-shrikes and the true shrikes live in sub-Saharan Africa. Of the true shrikes, the loggerhead is the only species to occupy North America. The other species are more widespread.

HABITAT

Just as shrikes inhabit many different areas of the world, they also live in many kinds of environments. For instance, many of the larger bush-shrikes occupy lowland and montane woodland up to 9,800 feet (3,000 meters), tending to keep to canopies, upper level of the forest, of trees or their undergrowth. Some shrikes, including the puffbacks, like to live in the tops of high trees in suburban gardens, whereas gonoleks and boubous prefer to look for prey near the ground in thick vegetation and scrub. Except for the marsh tchagra, tchagra shrikes search out dry, semi-open habitat with thick vegetation. Helmet shrikes are common in savannas and open woodlands, and are sometimes even seen in peoples' gardens. The true shrikes, meanwhile, require semi-open habitats with trees for perching so they can look down onto their hunting grounds.

DIET

Shrikes are generally insect eaters, but the larger bush-shrike species and the true shrikes add to their diet with small mammals and other birds' eggs, as well as berries and small fruits.

BEHAVIOR AND REPRODUCTION

Bush-shrikes, which make up the majority of the shrike family, make neat, cup-shaped nests of grass, fine roots, and small twigs, placing them in trees or bushes and sometimes using spider webs to hold them together or snake skins to decorate them. These birds are known to be territorial and monogamous (muh-NAH-guh-mus), having only one mate. After the breeding season, which is usually begins with the start of the rainy season, female bush-shrikes usually lay two or three eggs. Helmet-shrikes, of which very little is known about their breeding behavior, are cooperative breeders, where a dominant mating pair has a number of helpers that assist in feeding and caring for their nestlings, young birds that are unable to leave the nest. These are called "family parties." Helmet-shrikes make small, cup-shaped nests from bits of bark with spider web decorations. The females lay a clutch of two to five eggs. True shrikes also use cooperative breeding. Their nests are cup shaped as well, but



A FULL CUPBOARD IS A TURN ON

With their habit of impaling their prey on thorns and other sharp projections in their environment, loggerheads often create what biologists believe are "larders," or storehouses of food. These serve to both attract mates, who appreciate good providers, and tide the birds over when there is less prey available.

sometimes messily constructed. Females lay clutches of three to eight eggs, and their nestlings remain in the nest for fourteen to twenty-one days. Some of the shrike species put on courtship displays, behaviors that lead to mating, such as males and females singing duets, showy flights, and puffing out their back feathers.

Because most shrike species live in heavily vegetated areas and are sedentary, stay in the same area throughout the year, biologists know relatively little about their behavior, because they are hard to find. Bush-shrikes sometimes give their presence away to birdwatchers by their distinctive, piercing whistles and bell-like sounds, especially those that live in dense bush or tropical forests. Helmet-shrikes, like the true shrikes, are more outgoing and visible, gathering and feeding in groups of up to thirty individuals. Twenty-three of the twenty-five true shrike species are extremely territorial and mark out individual areas for themselves that vary in size depending on the species. They generally practice ritual courtship feeding, where the male feeds the female.

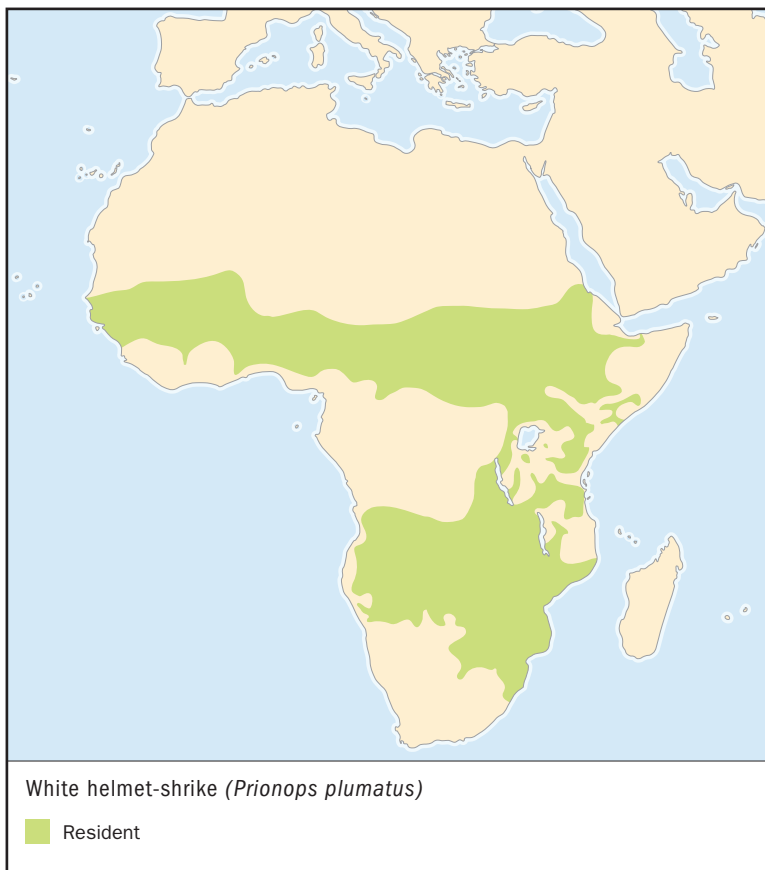
Bush-shrikes tend to feed by rummaging through vegetation at different levels of the forest ecosystem. Helmet-shrikes are noisy, sociable hunters that search the woods from tree base to upper branches. The true shrikes depend upon their patience and sharp vision to catch prey, sitting for long periods on perches until something on the ground draws their deadly attention. However, they also jump into the air to catch insects.

SHRIKES AND PEOPLE

Shrikes have only recently overcome their reputation as “harmful” birds, although they are still hunted and either eaten or used as decoys to capture larger birds of prey. Founded in 1991, the International Shrike Working Group, along with numerous bird groups around the world, is working to protect this bird family and learn more about it.

CONSERVATION STATUS

Nine shrike species, including six bush-shrikes, two helmet-shrikes, and one true shrike, are currently on the World Conservation Union (IUCN) Red List, a list of globally threatened animals, those at risk of extinction. All of them are native to sub-Saharan Africa and all live in forest habitats, which are rapidly being cleared to make way for agriculture that use a lot of pesticides. Five other species are listed as Near Threatened, in danger of becoming threatened with extinction, for the same reason.



WHITE HELMET-SHRIKE

Prionops plumatus

SPECIES ACCOUNTS

Physical characteristics: Also known as white-crested helmet-shrikes, white helmet-shrikes are distinguished by their helmet-like ruff of stiff white feathers around their bills and foreheads that blend into a long, erect crest. They range in size from 7.4 to 9.8 inches (19 to 25 centimeters) and typically weigh between 0.9 and 1.3 ounces (25 to 37 grams). Males and females look very similar, but the female is slightly larger. The birds' crown, sides of head, and cheeks are gray, with a dark bar on the sides of and around the neck. Otherwise, the upperparts are greenish black, with a narrow white stripe down the wing. Undersides are bright white, including the underside of the tail. The white-crested helmet has a greenish black bill, yellow eyes

Family parties assist in tending white helmet-shrike nests and young; five birds helped tend this nest. (C. Laubscher/Bruce Coleman Inc. Reproduced by permission.)



surrounded by a yellow wattle, and orange-yellow legs and feet. Young birds are similarly colored, but more subtly.

Geographic range: White helmet-shrikes are native and locally common in sub-Saharan Africa from the western side of the continent east to Eritrea and south along the eastern side of the continent to South Africa. They may also be found in southern Africa from northern Namibia east and south across northern Botswana and South Africa and south into Mozambique and Swaziland.

Habitat: The dominant breeding pairs live in deciduous broad-leaved woodlands, while subordinate, nonbreeding individuals often move farther out during the winter into savannah and cultivated gardens outside cities. This species will rarely breed in eucalyptus (yoo-kah-LIP-tus) plantations.

Diet: Like the majority of the Laniidae family, white helmet-shrikes forage, search for food, in the canopies of trees as well as on their branches and trunks, and on the ground. They also catch insects in the air on occasion. This species spends most of its foraging time in the

winter on the ground, and stays in the trees during warmer seasons. White helmet-shrikes especially favor foraging in areas of recent fires. In general, they eat mainly caterpillars, moths, termites, and grasshoppers, but will also eat spiders and lizards.

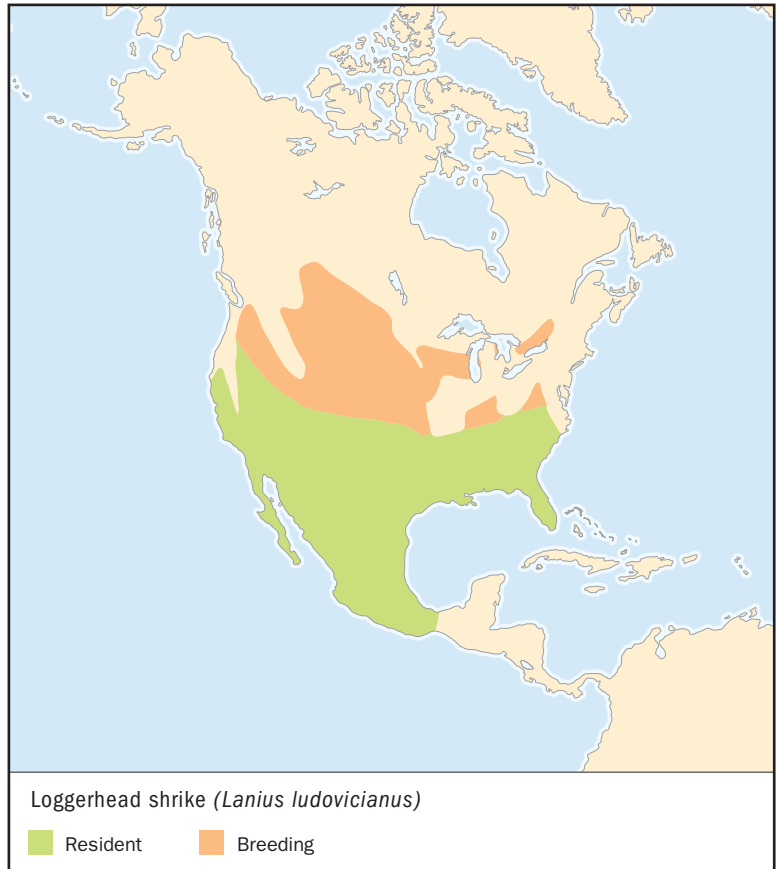
Behavior and reproduction: White helmet-shrikes are often seen moving among trees in small flocks of three to twenty-four individuals. Their coloring and undulating, wave-like, flight pattern are unmistakable, as is its group chorus, which has been described as sounding like “krawow, krawow, kreee, kreee, creepkrow, creepkrow.” They are extremely sociable birds, one calling bird will always cause the others in the group to respond. Growls, bill snaps, and squeaks are also used to alert others about prey, intruders, nesting needs, etc. Dominant and subordinate individuals have different calls. The birds are resident, but not sedentary, and leave their breeding territories to wander their local habitats after the young leave the nest.

White helmet-shrikes become sexually mature at two years of age, although the vast majority never get a chance to breed until they are five years old. This is due to the hierarchical (hi-uh-RAAR-kih-kul), rank, structure of their populations, in which there is only one mating pair allowed within a “family party.” Other members of the family party are assistants to the dominant pair. The dominant pair chooses the nest site, but all members of the group help build the nest, incubate the clutch, and guard and feed the nestlings.

Dominance is asserted by nudging others away from food and getting prime spots at the roost, but obvious aggression is unusual. These shrikes are extremely social birds and tend to do everything together: preening, attacking intruders, and foraging. Their noisy communications echo through their forest homes as they coordinate activities among themselves. Groups of helmet-shrikes often join with other species of birds as they move around their territory. However, one group of white helmet-shrikes will firmly defend its territory against another group, with displays of bill snapping, calling, and stretching their heads upward. The face-off ends when members of one group fly at the other, hopefully causing the offending group to retreat.

White helmet-shrikes and people: Although many shrikes are still hunted by humans, white helmet-shrikes have no other special significance to people.

Conservation status: White helmet-shrikes are not threatened. ■



LOGGERHEAD SHRIKE *Lanius ludovicianus*

Physical characteristics: Also known as migrant shrikes and butcherbirds, loggerhead shrikes grow to about 8.2 inches (21 centimeters) long and 1.7 ounces (48 grams) in weight—about as large as a robin. This striking bird is relatively large within the Laniidae family, and has a large head as well, which may be the source of its unusual name. Males and females look similar, with gray, white, and black markings and a black mask that extends to just over the eyes. Their upperparts are gray with white bands at the shoulders, while the bottom half of the wing is black. Undersides are white and sometimes have a barred texture. The loggerhead's appearance varies subtly by region throughout its range.



Geographic range: The only shrike native to North America, the loggerhead also occupies large areas of Mexico, Alaska, and Canada, although its Canadian and Alaskan ranges shrink considerably during winter.

Habitat: Loggerhead shrikes live in many types of semi-open habitats that are dominated by short vegetation. Those native to Illinois, New York, and Maryland frequent pastures, while those endemic to western states prefer sagebrush, desert scrub, and pinyon-juniper woodlands with small shrubby trees. Residential areas with suitable perches often have a number of loggerhead shrikes occupying them, and the birds have been recorded in mountainous areas up to 6,600 feet (2,000 meters) as well.

Diet: Loggerheads eat mainly arthropods, invertebrates (animals without backbones) that have segmented bodies, but seem to prefer beetles and grasshoppers. They feed on small vertebrates, animals with backbones, such as mice, moles, lizards, small birds and snakes, bats, and fish, especially in winter.

Loggerhead shrikes impale their prey on fences or thorned branches to anchor it while they eat. (© Maslowski/Photo Researchers, Inc. Reproduced by permission.)

Behavior and reproduction: Loggerhead shrikes kill their vertebrate prey by quickly breaking their necks and using their sharp, heavy bills, which have a special cutting tooth on the upper part, to sever the spinal cord. The birds carry prey up weighing as much as their own body weight to a fence or thorny bush where they can impale their meal. This technique also allows them to anchor their prey as they dismember and eat them, since their claws are not strong enough for this purpose.

The loggerhead's flight pattern is distinctive, characterized by wing fluttering followed by a glide. When hunting, the birds swoop down from their perch, hover briefly over an area of open ground, and then flap up to another perch.

This species mates in the spring, during which they are most vocal. They do not have a song, but rather a series of sounds more like shrieks or a metallic tapping. Loggerheads are sexually mature at one year, and are usually monogamous, although sometimes a female will mate with a second male and have a second brood during breeding season. Loggerheads sometimes even mate with other species of shrikes. They prefer to mate and raise their young in grassy pastures, shrubs or small trees, on utility wires, or high up in dead trees. Both sexes gather the nest materials, but the female alone makes the structure. The female lays a clutch of five to seven eggs and then begins to incubate them for about sixteen days. The male feeds her during this period. Both parents feed the nestlings, which remain under their care constantly for seventeen to twenty days. The young stay near the nest after fledging, growing the feathers needed for flight, returning at night to be warmed by the female parent, and they receive food from both parents for up to three weeks after leaving the nest. Soon after, the family group breaks up and the individuals begin migration.

Loggerhead shrikes and people: Humans are increasingly appreciative of the loggerhead's ability to control local populations of pest insects and mammals. These birds are also of major interest to conservationists, because their numbers are decreasing for no apparent reason. However, habitat fragmentation and destruction are thought to be major causes.

Conservation status: Loggerhead shrikes are considered endangered, facing a risk of extinction, in Quebec, Canada, but otherwise it is not yet officially on the threatened list. One of its subspecies, the San Clemente loggerhead, is highly endangered, although conservation efforts have improved its outlook. ■

FOR MORE INFORMATION

Books:

Harris, T. *Shrikes and Bush-shrikes*. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2000.

Lefranc, N. *Shrikes: A Guide to the Shrikes of the World*. New Haven, CT and London: Yale University Press, 1997.

Periodicals:

Van Nieuwenhuysse, D. "Global Shrike Conservation: Problems, Methods, and Opportunities." *Aves* 36 (1999): 193–204.

Web sites:

"Birds: Loggerhead Shrike." Hinterland Who's Who. <http://www.hww.ca/hww2.asp?pid=1&id=52&cid=7> (accessed on July 2, 2004).

"Helmet-Shrikes *Prionopinae*." Bird Families of the World <http://www.montereybay.com/creagrus/helmet-shrikes.html> (accessed on July 2, 2004).

VANGAS

Vangidae

Class: Aves

Order: Passeriformes

Family: Vangidae

Number of species: 15 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Vanga species look so different from one another that only ornithologists, scientists who study birds, and DNA comparisons have been able to find enough similarities among them to realize that they are related species within one family. Males and females of most vanga species have different colors and patterns. Colors among species vary enormously. The three closely related species Lafresnaye's vanga, Van Damm's vanga, and Pollen's vanga, are similar in appearance, both males and females sporting differing patterns of sharply defined black, white, and gray. The head may be entirely black or only partly so, the rest white. Bernier's vanga is simple in design but striking in appearance, with a glossy black body and head, white eye, and blue bill and legs. The female outshines the male, her entire coat being a bright red-brown with narrow, black streaks. Perhaps the most beautiful and memorable of all vanga species is the blue vanga, with its vivid ultramarine blue head, wings, and bill, white underside, white eyes enclosed by a black mask, and a blue and black tail.

As a whole, vangas are small birds. The largest species are the sickle-billed vanga, with a beak-to-tail length of 12.5 inches (32 centimeters) and a body weight of slightly over 4 ounces (114 grams); the helmet vanga, with a length of 12 inches (31 centimeters) and a body weight of 3.8 ounces (108 grams); and the hook-billed vanga, with a length of 11 inches (29 centimeters) and a weight of 2.5 ounces (67 grams). The smallest species are the red-tailed vanga and Chabert's vanga, both 5.5 inches (14 centimeters) long and weighing only 0.5 ounces (14 grams),

and the blue vanga, 6 inches (16 centimeters) long and weighing just under 1 ounce (28 grams). Head-and-body lengths for other species run 8 to 10 inches (20 to 25 centimeters).

The original beak of the ancestral vanga species went through some extreme shape changes in descendant species. The helmet vanga sports a big, casque-like (KASK-like) bill reminiscent of the bills of hornbills or toucans. The sickle-billed vanga has a thin, almost needle-like bill, curved downward, that may reach nearly 3 inches (7 centimeters) in length. The bill of the hook-billed vanga is straight, with a small, downturned hook at the end of the upper bill. Van Damm's vanga, Lafresnaye's vanga, and Pollen's vanga share a very unusual bill type. The bill is thick, strong, deep vertically and narrow horizontally, giving it a distinctive chisel shape, and fit for the chisel-like work of prying bark from trees, prior to yanking insects out of the wood.

GEOGRAPHIC RANGE

Vangas occupy varying ranges in the forested parts of Madagascar, a large island off the southeastern coast of Africa. One species, the blue vanga, is the only species found outside of Madagascar, it also lives on the Comoro Islands between Madagascar and Africa.

HABITAT

All vangas are forest species, and are found in all the major forest types of Madagascar, which includes tropical rainforest along the east coast, tropical deciduous forest (with a rainy and a dry, rainless season) along the west coast, and the so-called "spiny forest" (or xeric [ZEHR-ik] forest) in the arid south. Some species also forage in scrub.

DIET

All vanga species are primarily insectivorous, feeding mostly on insects and related creatures like spiders, although some species add small amounts of fruit to their menus, and some spice up their insect diets with frogs, lizards, snails, mouse lemurs, and young birds.

Vangas consume insects and related creatures by means of four methods: gleaning, or plucking insects off leaves, twigs, branches, and bark while the bird is perching; sally gleaning, or gleaning while flying tight loops about the feeding site; flycatching, in which a bird on the wing snags and eats flying

insects; and probing, in which the bird uses its bill to poke under and tear off strips of tree bark to reach insects. A vanga species may use one of these feeding methods, or various combinations.

When handling relatively large prey, too large to be downed in a single gulp, some vanga species engage in “clamping” or “grasping.” When clamping, a perching vanga, having caught the prey with its bill, transfers it to one of the perching feet, which holds the prey against the branch. When grasping, a vanga holds the prey in an outstretched foot that is not grasping a branch. In either case, the vanga then tears apart and eats its prey.

Vangas may forage together in mixed-species flocks of two or more vanga species and sometimes including insectivorous bird species of other families, for protection in numbers and for helping one another find food.

BEHAVIOR AND REPRODUCTION

Little is known about reproductive behavior. Mating and raising of chicks for most species takes place from October through January, although breeding times are not known for all vanga species. Two exceptions are the nuthatch vanga and Bernier’s vanga, which nest through August and September.

A female lays from one to four eggs. The eggs are variously colored among species. The nests so far observed have been bowl-shaped and built on branches or in forks of branches. The nests are woven from various types of plant materials, such as leaf stalks, twigs, moss, and rootlets. Several vanga species reinforce the weaving with spider webs.

VANGAS AND PEOPLE

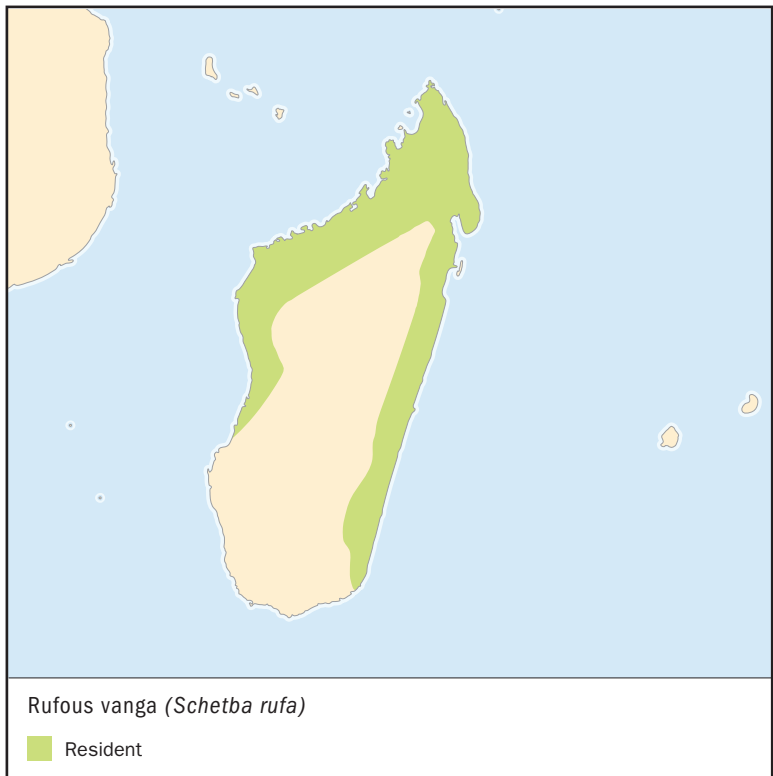
No vangas are pest species, since they are confined to forested areas away from agricultural land and have little interaction with humans. In Madagascar’s growing ecotourism industry, vangas play a starring role as symbols of the uniqueness of Madagascar’s animal life.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists three vanga species as Vulnerable, facing a high risk of extinction, and one as Endangered, facing a very high risk of extinction. The species listed as Vulnerable are the red-shouldered vanga, due to restricted

territory and a small population; Bernier's vanga, because of its small population and deforestation; and the helmet vanga, because of limited territory and deforestation. Van Dam's vanga is listed as Endangered due to its very small range and fragmented populations.

SPECIES ACCOUNT



RUFIOUS VANGA *Schetba rufa*

Physical characteristics: Bill-to-tail length is 8 inches (20 centimeters). The male has a black head, neck, and chest, with blue highlights. The bill is blue-gray, the eyes are dark red, the upperparts are reddish brown and the belly is white. The wings are red-brown and brown. The female is similarly colored, the differences being white cheeks, chin, and throat on the otherwise black head, and a gray collar.

Geographic range: The rufous vanga lives in Madagascar, in rainforest along most of the east coast, and in tropical deciduous forest in the northwest.

Habitat: The rufous vanga prefers undisturbed rainforest from sea level to 5,400 feet (1,800 meters) above sea level, and undisturbed or slightly disturbed tropical deciduous forest.

Diet: The rufous vanga feeds mainly on insects and occasionally on small lizards.

Behavior and reproduction: The rufous vanga picks insects and lizards from branches and tree trunks or flushes them from ground litter. Of the various vanga species, this vanga spends the most time foraging on the ground. Often an individual sits on a low branch for long periods of time, watching for moving prey. The rufous vanga sometimes follows another bird, the white-breasted mesite (family Mesitornithidae). The mesite runs through ground litter, flushing out insects and other small animals for its own feeding, the vanga helping itself to some. It is not a mutually beneficial relationship; the vanga merely takes advantage of the mesite's feeding tactic.

Rufous vangas live in groups of four to eight, and may join in mixed-species feeding flocks with other vangas or with bird species other than vangas. Their voice is melodious, and pairs may sing duets, often punctuated by clacking their bills.

The rufous vanga is one of the few vanga species whose reproductive biology is even partly known. The breeding period runs October through December, and chicks are born November through January. A female lays one to four eggs. A noteworthy aspect of reproduction in this species, seen in other bird families, is "helping behavior." During the breeding season, a nesting site may be occupied by one or two extra individuals in addition to the nesting pair. These "helpers" will fill in for the parents, sitting on the eggs and even feeding and guarding the chicks while the parents are out feeding. Some of the helpers are immature males, recognized as such by their spotted necks.

Rufous vangas and people: Rufous vangas do not interact with humans in any significant way.

Conservation status: A widespread species in Madagascar, the rufous vanga has no special conservation status. ■

FOR MORE INFORMATION

Books:

Goodman, Steven M., and Jonathan P. Benstead. *The Natural History of Madagascar*. Chicago: University of Chicago Press, 2003.

Langrand, O. *Guide to the Birds of Madagascar*. New Haven, CT: Yale University Press, 1990.

Morris, P., and Hawkins, F. *Birds of Madagascar: A Photographic Guide*. New Haven, CT: Yale University Press, 1998.

Periodicals:

Goodman, S. M., A. F. A. Hawkins, and C. A. Domergue. "A New Species of Vanga (Vangidae) from Southwestern Madagascar." *Bulletin of the British Ornithological Society* 117 (1997): 5–10.

Graetz, J. "Nest Observations of the Helmet Vanga, *Euryceros prevostii*." *Newsletter of the Working Group on Madagascar Birds* 1, no. 2 (1991).

Safford, Roger. "The Helmet Vanga, *Euryceros prevostii*." *Bulletin of the African Bird Club* 7, no. 1 (March 2000).

Yamagishi, S., et al. "Extreme Endemic Radiation of the Malagasy Vangas (Aves: Passeriformes)." *Journal of Molecular Evolution* 53, no. 1 (July 2001): 39–46.

Web sites:

Birdlife International. <http://www.birdlife.net> (accessed on June 20, 2004).

family CHAPTER

WAXWINGS AND SILKY FLYCATCHERS

Bombycillidae

Class: Aves

Order: Passeriformes

Family: Bombycillidae

Number of species: 8 species

PHYSICAL CHARACTERISTICS

Birds of the Bombycillidae family range in size from about 5.9 to 9.4 inches (15 to 24 centimeters) long and can weigh from 1 to 2.1 ounces (30 to 60 grams). They are sleek, elegantly marked songbirds, with short bills, crested heads, and plump bodies. Waxwings generally have buff-gray bodies with black eye and chin masks. Their contrasting wings have white, yellow, or vivid red patches. Except for the Japanese waxwing, their common name refers to the distinctive red appendages on their secondary flight feathers, which look like drops of wax. Biologists do not know if the spots have a purpose, but they are absent in juveniles. The birds' tail bands are usually yellow, but sometimes orange. Waxwings have very high-pitched chatters, whistles, and warbles that many human ears can miss. Silky flycatchers have longer tails, and their crests look more bristly. These birds are generally brown, black, or gray, and some of the four species have yellow or white patches. The gray hypocolius is a gray bird with a black mask and tail band. Ornithologists, scientists who study birds, continue to debate whether the hypocolius makes up a separate family of birds unrelated to the flycatchers and waxwings.

GEOGRAPHIC RANGE

Each of the three groups has a different range. Waxwings are present across temperate regions of North America, Europe, and Asia, while the cedar waxwing winters as far south as Guatemala. Silky flycatchers occupy habitat from the southern United States into Central America, and the gray hypocolius lives in the Middle East and the Indian subcontinent.

phylum

class

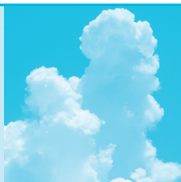
subclass

order

monotypic order

suborder

▲ family



INVASIVE PLANT CHANGING CEDAR WAXWING COLORS

Scientists have noted that waxwing tail bands have been both yellow and orange for the last thirty years. Prior to that time, their tail bands were always yellow. The scientists believe that waxwings have been eating a lot of berries from the introduced (not native) European honeysuckle, which was introduced about then. Scientists think that the birds are being affected by pigments in the orange fruit.

HABITAT

Waxwings have become increasingly common in suburban neighborhoods, where they feast on fruits and berry-producing bushes. However, they prefer rows of bushes, shrubs, or trees, and open woodlands. Silky flycatchers and the hypocolius live in dry scrub, characterized by straggly, stunted tree and shrub growth, and desert.

DIET

The staple foods for this family are fruit and berries. Cedar waxwings have a special part of their esophagus in which they store these foods, probably to make the most of the materials they can digest while foraging, searching for food. These birds also eat insects, and will fly after them, pick them off leaves or bark, or dive after them from high perches.

BEHAVIOR AND REPRODUCTION

Birds from the Bombycillidae family are generally outgoing and energetic. Waxwings travel in flocks that can reach into the thousands searching for fruit sources. They are not territorial. Silky flycatchers are more territorial, and nest in casual colonies. Phainopeplas migrate laterally to find wetter habitats after their breeding season ends.

Waxwings are monogamous (muh-NAH-guh-mus), having just one mating partner for the breeding season. The breeding habits of the silky flycatchers and hypocolius are not well known. All of the Bombycillidae species make a small, cup-shaped nest, usually in the strong fork of a tree. Waxwings lay four to six eggs, and silky flycatchers lay two to four. The young birds have no feathers when they hatch, and both parents feed them.

WAXWINGS, SILKY FLYCATCHERS, AND PEOPLE

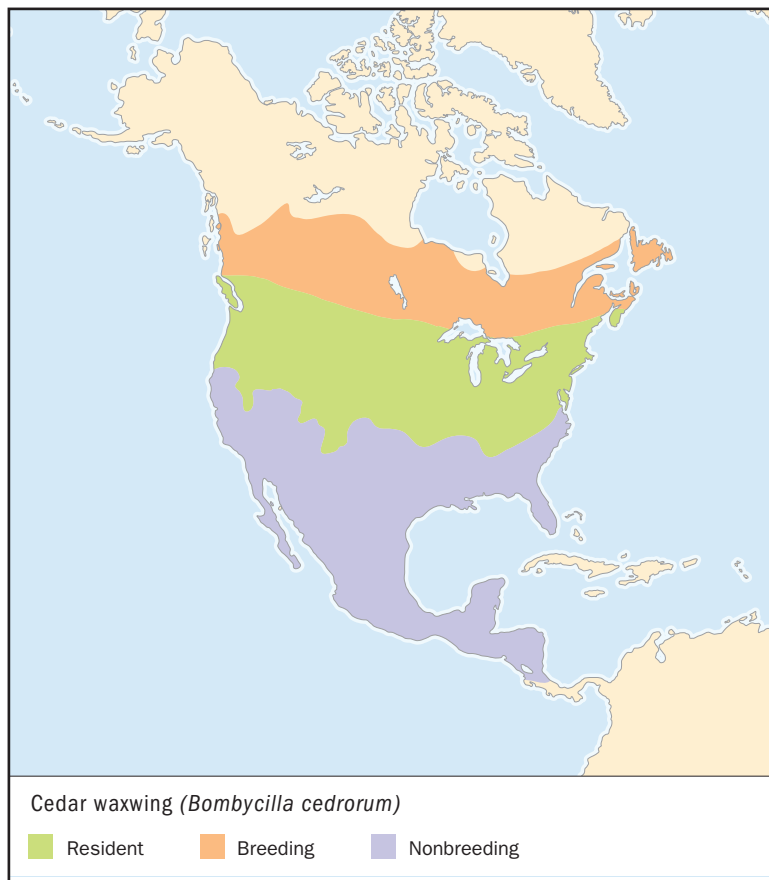
Because they tend to move suddenly and in large numbers into human areas in search of food, people sometimes view the arrival of these birds as an invasion. Waxwings especially, which

tend to fly into windows in suburban areas and to gorge on any berry-producing bushes, are occasionally considered pests.

CONSERVATION STATUS

None of the birds in this family are listed as endangered or threatened. In fact, in North America, populations of cedar waxwings have increased.

SPECIES ACCOUNTS



CEDAR WAXWING *Bombycilla cedrorum*

Physical characteristics: Sleek and elegant birds, cedar waxwings have plumage, feathers, with a silky texture. Weighing in at about 1.2 ounces (32 grams), adult waxwings are usually about 6 inches (15 centimeters) long. They are colored in pale shades of gray and brown, with pale yellow on their breast and belly. The inner feathers of its wings, the secondary flight feathers, end in what look like drops of red wax, and a white-edged black mask covers the eye area at a downward angle, giving them a serious appearance. The average life span of the cedar waxwing is one to five years, but occasionally they live up to seven years.



Female cedar waxwings incubate the eggs until they hatch, after which both parents feed and care for the nestlings. (© Hal H. Harrison/Photo Researchers, Inc. Reproduced by permission.)

Geographic range: Found only in North America during most times of the year, cedar waxwings breed mainly in Canada and winter in the southern United States and Mexico. They are common in the central and northeastern United States and Pacific Northwest.

Habitat: Cedar waxwings prefer to stay out of forest interiors, but hang around areas on the outskirts to find food and perching sites. They mainly inhabit abandoned fields and open woodland, as well as grasslands, farms, pine tree plantations, orchards, and suburban gardens, especially when these areas are near streams or rivers.

Diet: This species feeds mainly on fleshy fruits while hanging from branches of trees. They particularly favor cedar or juniper berries during the winter, but will also eat insects. During spring, these waxwings seek out the sweet sap of maple trees, hanging from branches to lick up the drops. Biologists have noted that cedar waxwings occasionally become intoxicated by alcohol in overripe fruit, and have observed the birds falling to the ground, flying into windows, or being hit by cars as they sit dazed in the street.

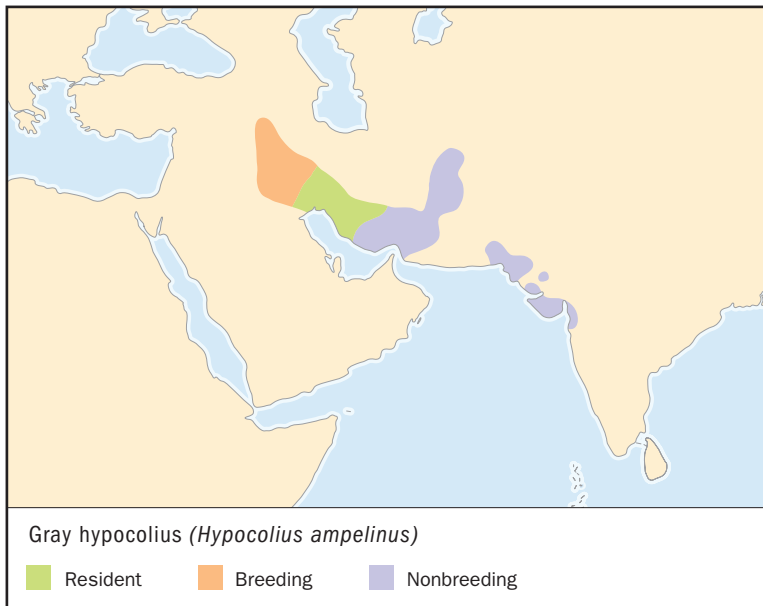
Behavior and reproduction: Cedar waxwings are very social birds and flock together all year. They rarely do anything on the ground, preferring to preen, to smooth and clean their feathers, and look for insects from high, exposed places. Although they are not territorial, parents may show aggressive behavior at their nest, including mouth opening, crest raising, feather ruffling. Their flight pattern consists of short, direct flights from bush to bush using steady wing beats. They have two basic calls: a high-pitched, quickly repeated buzz or trill and a hiss-like whistle.

This species is monogamous within a breeding season, from June through August. They are one of the last bird species in North America to nest because they rely on the ripening of summer fruit as their cue to breed. Males court their mates by performing a hopping dance and delivering an insect or bit of fruit to her. If the female joins the male in the hopping dance, the pair mates for the season and the female begins choosing the nest site.

Female waxwings often have two broods, groups of young birds that hatch together, per season. Females lay a clutch, a group of eggs, of two to six speckled pale blue-gray eggs in a cup-shaped nest woven of grasses and fine twigs. Females incubate, sit on, the eggs for twelve to fifteen days, after which both parents feed and care for the nestlings, young birds unable to leave the nest. The young fledge, grow the feathers needed for flight, after fourteen to seventeen days and usually go off to join another flock. The young will not begin breeding until the following summer. Occasionally, brown cowbirds lay their eggs in the waxwings' nests to trick the waxwings into taking on their parental duties for them.

Cedar waxwings and people: Many people are first acquainted with these beautiful birds after one smashes into their garden-facing windows. Some people consider them pests because of their greedy consumption of berries and fruits. However they are also very helpful in controlling the insect population.

Conservation status: Populations of this species have increased greatly since the pesticide DDT was banned in the 1970s. They are not a threatened species. ■



GRAY HYPOCOLIUS

Hypocolius ampelinus

Physical characteristics: Also known as gray flycatchers, gray hypocoliuses are unique in the family. Adults are generally about 9 inches (23 centimeters) long and weigh about 1.3 to 2 ounces (28 to 55 grams). Gray hypocoliuses are long-tailed birds with a distinctive crest and white markings on their wings. Males are a uniform gray color with a black mask that goes around their heads and a bold black triangular band on their tails. Females are a sandy-brown color with a creamy throat and no mask. Their tail ends are dark. Juveniles are colored like the female.

Geographic range: Gray hypocoliuses are birds of the Middle East and Indian subcontinent, wintering in Saudi Arabia and breeding throughout Iran, Iraq, Turkmenistan, and Pakistan.

Habitat: This species occupies tropical and subtropical areas, especially areas with more dense vegetation and arid, dry, lowlands. They are most often found in river valleys near desert or semidesert, and forage through small tree groupings, irrigated and cultivated areas, palm groves, and broad-leaf scrub.



The gray hypocolius is difficult to study, partly because it is a skittish and shy bird, not easy to find, and flies immediately to dense vegetation when it's disturbed. (Illustration by Jacqueline Mahannah. Reproduced by permission.)

Diet: Gray hypocoliuses eat mostly fruit, but sometimes insects as well. They rarely go to the ground, instead looking through foliage, leaves, for food. They are known for their careful and deliberate feeding behavior, using their long tails as a lever to balance as they extend their bodies to reach fruit and berries. When eating fruit, the bird chews the pulp and spits out pits, larger seeds, and skin.

Behavior and reproduction: Skittish and shy birds unless accustomed to the presence of humans, gray hypocoliuses are not easy to find and fly immediately to dense vegetation when disturbed. This bird, like its cousins, is outgoing and social, and in winter forms flocks of up to twenty individuals that live in loose colonies. This species has a soft, gentle, cat-like call: “tre-tur-tur” or “whee-oo.” Their flight pattern is strong and direct, with quick wing beats and occasional undulating, wave-like, glides.

Gray hypocoliuses breed from May to June, locating the nest within a dense bush or low tree up to 12 feet (4 meters) from the ground. The cup-shaped nest sits atop a base of twigs, and is made of grass and plant down and lined with

wool, hair, and more down. The female lays three or four oval-shaped, smooth, glossy eggs that are white to pale gray. Both parents take turns incubating the clutch for fourteen to fifteen days.

Gray hypocoliuses and people: Many devoted birdwatchers wait a lifetime to add a sighting of this bird to their list. Their residence in the politically charged countries of the Middle East makes them particularly difficult to observe.

Conservation status: Gray hypocoliuses are not believed to be threatened, although biologists encounter many political difficulties when attempting to visit the bird's home countries to study it. ■

FOR MORE INFORMATION

Books:

Baicich, Paul. *A Guide to the Nests, Eggs, and Nestlings of North American Birds*. Princeton, NJ: Princeton University Press, 1997.

Grimmet, Richard, Carol Inskipp, and Tim Inskipp. *Birds of the Indian Subcontinent*. London: Christopher Helm Ltd, 1998.

Sibley, C. G., and B. L. Monroe. *Distribution and Taxonomy of Birds of the World*. New Haven, CT: Yale University Press, 1991.

Zim, Herbert Spencer, Ira Noel Gabrielson, and James Gordon Irving. *Birds: A Guide to Familiar Birds of North America*. New York: St. Martin's Press, 2001.

Periodicals:

Witmer, M. C. "Consequences of an Alien Shrub on the Plumage, Coloration, and Ecology of Cedar Waxwings." *Auk* 113 (1996): 735-743.

Web sites:

"*Bombacilla cedrorum* (Cedar Waxwing)." Animal Diversity Web. http://animaldiversity.ummz.umich.edu/site/accounts/information/Bombycilla_cedrorum.html (accessed on July 3, 2004).

"Grey Hypocolius." Stamps of Israeli Birds. <http://my.ort.org.il/holon/birds/ba2.html> (accessed on July 3, 2004).

"HYPOCOLIUS: Hypocoliidae." Bird Families of the World. <http://www.montereybay.com/creagrus/hypocolius.html> (accessed on July 3, 2004).

"WAXWINGS: Bombycillidae." Bird Families of the World. <http://www.montereybay.com/creagrus/waxwings.html> (accessed on July 3, 2004).

PALMCHAT

Dulidae

Class: Aves

Order: Passeriformes

Family: Dulidae

One species: Palmchat (*Dulus dominicus*)

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The only member of its family, the palmchat was first described in 1766. The bird is typically 7.5 to 8 inches (19 to 20 centimeters) long and has a fairly long tail. Its upper parts are olive brown, with a dark yellow-green area across its rump and on the edges of its primary wing feathers. Its under parts are creamy white with heavy brown streaks, while its strong bill is yellow and its eyes are russet. Adult males and females look very similar, but immature birds have darker throats. Although it is distantly related to the North American waxwings, its plumage is not soft and velvety. It is a vocal bird, and may be recognized by its cheerful gurgles and “cheep” calls. It does not have a song, but rather blurts out noises and single notes.

GEOGRAPHIC RANGE

The palmchat is one of only two birds native to the Caribbean (the other is the Jamaican tody). It is native to the West Indian island of Hispaniola, which is split into Haiti and the Dominican Republic, including the Saona and Gonave islands.

HABITAT

Palmchats forage and breed almost exclusively in savannas, flat grasslands, dotted with royal palms and in valleys, and tend to stay at elevations between sea level and 4,900 feet (1,500 meters). It is also happy to live in city parks and other areas heavily trafficked by humans as long as food trees are present.

DIET

This species eats mainly fruit, including berries from palm trees and gumbo-limbo trees. They also eat blossoms and buds, particularly of orchid tree blooms, but are not considered harmful to the trees.

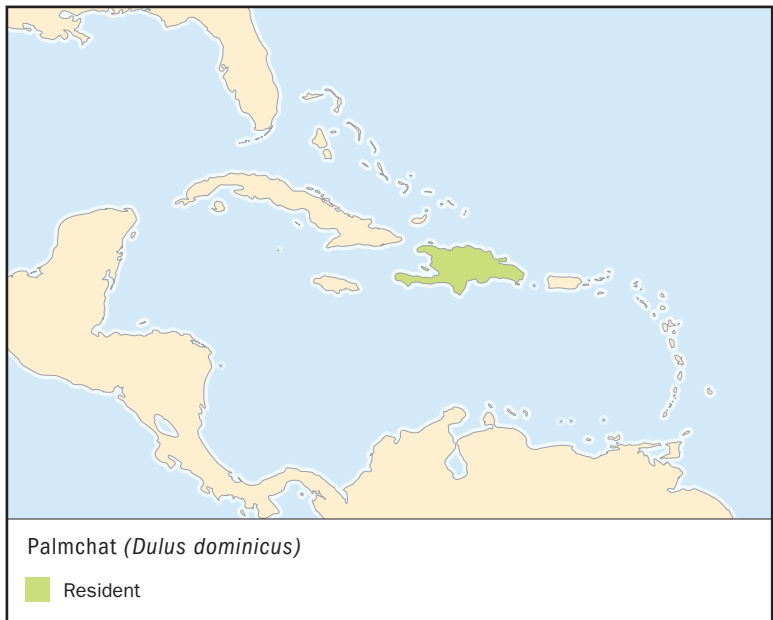
BEHAVIOR AND REPRODUCTION

Palmchats are very social birds and congregate in small flocks that have a communal nest where they meet and rest. These little bands usually consist of several pairs. The birds show great affection for each other, preferring to snuggle close together on branches even in their tropical climate. Palmchats' reputation for alertness and energy may come partly from their continuously erect posture, with tails pointed straight down. The flocks are noisy, especially near their group nest, where they rest at night and during daytime breaks in activity. When not looking for food, palmchats sit on palm fronds or the upward-pointing ends of pruned fronds. They emerge from their nests in the early morning to preen and dry in the sun.

These birds breed mostly between March and June, but occasionally some pairs will breed at other times. Several pairs of palmchats build a nest together, each with its own chamber and entrance. The large, messy nest is built around the crown of a palm, supported by its lower fronds. In areas lacking palms, the birds will build their nests on top of telephone poles, in the dense foliage of a broad-leaved tree, or in pine trees. Their main building material is twigs, which they intertwine loosely to create the 3- to 6.5-foot-diameter (1- to 2-meter) structure. Some of the twigs can be as long as 10 to 18 inches (25 to 45 centimeters) long. The females lay two to four grayish purple eggs that are thickly spotted at the wide end.

PALMCHATS AND PEOPLE

These lively birds are a familiar sight in most towns on Hispaniola and its environs, but they do not have any particular significance to humans.



CONSERVATION STATUS

The palmchat is not threatened.

FOR MORE INFORMATION

Books:

Bird, David M. *The Bird Almanac: A Guide to the Essential Facts and Figures of the World's Birds*. Buffalo, NY: Firefly Books Ltd., 2004.

Gill, Frank B. *Ornithology*. New York: W. H. Freeman and Company, 1994.

Raffaele, Herbert A. *A Guide to the Birds of the West Indies*. Princeton, NJ: Princeton University Press, 1998.

Sibley, David A. *The Sibley Guide to Birdlife and Behavior*. New York: Alfred A. Knopf, 2001.

Wauer, Roland H. *A Birder's West Indies: An Island-by-Island Tour*. Houston, TX: University of Texas Press, 1996.

Web sites:

"*Dulus dominicus*—Palmchat." InfoNatura. <http://www.natureserve.org> (accessed on June 21, 2004).

"Dulidae." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus> (accessed on June 21, 2004).

family CHAPTER

HEDGE SPARROWS

Prunellidae

Class: Aves

Order: Passeriformes

Family: Prunellidae

Number of species: 13 species

PHYSICAL CHARACTERISTICS

These birds, also known as “accentors,” are small and sparrow-like in appearance but not related to sparrows. The bill of a hedge sparrow is slender and more pointed than the sparrow. They range in size from 5 to 7 inches (13 to 18 centimeters), with a weight of 0.5 to 1.4 ounces (18 to 40 grams). The differences between the male and female are slight, though the male has longer wings, with ten functional primary feathers that can be rounded or pointed at the tip. The male is heavier than the female. The legs and feet of the bird are very strong. In general, the anatomy of the birds is strong and muscular, a feature that has been adapted due to their diet.

In color, a hedge sparrow tends to be brown-toned gray or a rusty brown. Males are slightly brighter than females, but are otherwise similar in appearance.

GEOGRAPHIC RANGE

Hedge sparrows are known to be widely distributed throughout the Palearctic region that includes the area from western Europe to Japan, in Asia north of the Himalayan mountains, and in Africa, north of the Sahara desert.

HABITAT

Hedge sparrows tend to live in the thick undergrowth of shrubs, and in alpine meadows rather than in the trees themselves. Habitats can vary slightly among the species.

phylum

class

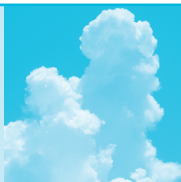
subclass

order

monotypic order

suborder

▲ **family**



SIDETRACKED TO NORTH AMERICA

The Siberian accentor has a habit of straying over to northwestern America on occasion, but primarily on the Aleutian Islands and western Alaska. This has been witnessed in the months of October through January. The subarctic forests of Siberia are the bird's usual breeding grounds.

The robin accentor can be found at high altitudes in central Asia, and prefers to live in dwarf rhododendrons and other scrub, or among the willows of damp meadows.

DIET

Accentors gather food by hunting or foraging on the ground, preferring invertebrates that crawl, particularly insects such as beetles, flies, aphids, ants, spiders, and worms. They feed primarily on seeds and berries in the winter and forage together in flocks.

BEHAVIOR AND REPRODUCTION

Accentors tend to have a very developed social system even though they are also known to be quiet and unobtrusive. Most of their activity occurs on the ground, or close to it, moving through running and hopping with small flicks of the wings and tail. When they are in flight, they exhibit rapid and undulating moves.

Female accentors tend to be exclusive. The male of some species, such as the dunnoek, might set up song territories in order to compete for and monopolize females. The result can be a male with two or three females, called polygyny (puh-LIH-juh-nee), or it can be a female with two or three males, called polyandry (PAH-lee-an-dree); or several males associated with several females, known as polygamy (puh-LIH-guh-mee). Polyandry is considered to be unusual even though it does occur. In such a situation, the breeding territory would be larger than for a single male-female pairing, providing for more protection against a greater number of predators. The Himalayan accentor can breed at altitudes as high as 16,400 feet (5,000 meters) into the mountains.

Breeding season for accentors runs from late March to August, with variations among the species depending on location and latitude. They lay a clutch of three to six eggs that are light blue-green to blue. Two clutches are generally bred and hatched every year, with an incubation period of eleven to fifteen days, with the nestlings raised another twelve to fourteen days before they leave the nest, or become fledglings. Both male and female take care of the young together.

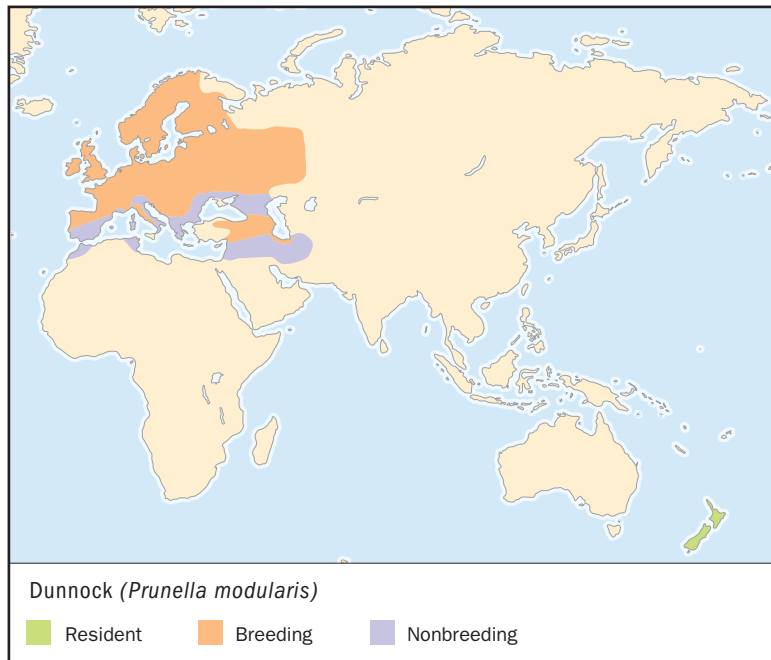
HEDGE SPARROWS AND PEOPLE

Accentors have an impact on people primarily in regard to ecotourism and the economic benefits from visitors focused on following birds in their natural habitats.

CONSERVATION STATUS

The Yemen accentor has been listed as Near Threatened, in danger of becoming threatened with extinction. Due to grazing animals, in addition to human behavior, the shrubland habitat on which the bird relies has been degraded. Other species have also declined but are not considered at risk. During the 1980s, the dunnocks that breed in England declined, but are maintaining themselves against further loss into the twenty-first century.

SPECIES ACCOUNT



DUNNOCK *Prunella modularis*

Physical characteristics: The dunnock is a relatively small bird that has an average length of 6 inches (15 centimeters), and weighs about 0.7 ounces (19 grams). Like other accentors, its beak is pointed and slender and its feet and legs are sturdy. The dunnock can have a blue-gray head and breast, and a light and dark brown back with streaks, brown-streaked flanks, and pink legs. The under parts of the dunnock tend to be uniformly gray with apricot markings.

Geographic range: The dunnock can be found throughout Europe, as far east as the western regions of Russia. In the northern regions, the dunnock is migratory. Those living in the southern parts of France and Spain tend to reside there on a continual basis. Between 1860 and 1880, the dunnock was introduced to New Zealand and remains there, as well.

Habitat: The dunnock resides in woods that have an ample amount of undergrowth, as well as in the hedges and shrubbery at the edges

of forests. They also thrive in farm areas that have a lot of vegetation, and in the gardens of the United Kingdom and New Zealand.

Diet: Dunnocks are omnivores, eating various invertebrates such as insects, spiders, and worms during warm months. In the winter they survive on seeds and berries, some of the various kind of seeds are in feeders meant for songbirds in gardens and backyards.

Behavior and reproduction: Dunnocks are known for their secretive behavior and tend to be shy in their habits. Most of the populations are migratory. During breeding season, they are seen either as individuals or in pairs. During the winter they tend to gather in large flocks in order to forage for food—with a good food source, a hundred or more might gather. The bird's voice is heard in a short but complex song that is composed of a succession of rapid and even notes and trills.

Breeding season for dunnocks runs approximately from the beginning of April to the end of July, generally raising two broods a year. The incubation period lasts from twelve to fourteen days, and the young are ready to fly about eleven to thirteen days after they are hatched. Both male and female parents care for the young. Dunnocks are sometimes polyandrous breeders, with a female mating with several males within the breeding territory. In that case, it is usual for all of the parties involved to raise the young.

Dunnocks and people: Dunnocks provide an economic benefit due to the numbers of people who engage in bird watching and the travel that sometimes accompanies it. The dunnock is also well known in the English countryside. In 2001, the ticks that live on dunnocks and other migratory birds were linked to the spread of a bacterial pathogen known as *Ehrlichia phagocytophila*, which causes the rare human disease of ehrlichiosis. This disease has been compared to Rocky Mountain spotted fever and emerges about twelve days following the bite of a tick. Though cases have occurred in the United States, the illness tends to be centered in the Far East and Southeast Asia, with most cases reported in western Japan.

Conservation status: The dunnock is not a threatened species, although its population in Britain did experience a decline by 45 to 60 percent between 1975 and 2001. Since 1986 the population remained steady. The cause was unknown. The decline was not experienced throughout the British Isles and Wales actually enjoyed a population increase. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. Smithsonian Books. London and New York: Dorling Kindersley Publishing, 2001.

Campbell, Bruce, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Elphick, Chris, John B. Dunning Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, Inc., 2001.

Fisher, James, and Roger Tory Peterson. *The World of Birds*. Garden City, NJ: Doubleday & Company, Inc., 1964.

Web sites:

"Dunnock." Bird Diary. <http://www.birddiary.co.uk> (accessed on May 5, 2004).

"Dunnock." British Garden Birds. <http://www.garden7ndash;birds.co.uk/dunnock.htm> (accessed on May 5, 2004).

"Breeding Birds in the Wider Countryside." Joint Nature Conservation Committee. <http://www.bto.org/birdtrends/wcrdunno.htm> (accessed on May 5, 2004).

"Dunnock." New Zealand Birds. <http://www.nzbirds.com/Dunnock.html> (accessed on May 5, 2004).

family CHAPTER

THRASHERS AND MOCKINGBIRDS

Mimidae

Class: Aves

Order: Passeriformes

Family: Mimidae

Number of species: 35 species

PHYSICAL CHARACTERISTICS

Mimids, members of the Mimidae family, average in length from 8.2 to 12.2 inches (20.5 to 30.5 centimeters). Their plumage, feathers, is not bright or colorful. Most species are shades of gray or brown and gray with some black or whitish markings. Many have long, curved bills used for foraging for prey on the ground or in trees.

GEOGRAPHIC RANGE

Mimids are found throughout North and South America, and on a number of islands, including the Falklands, West Indies, Bermuda, the Galápagos, and some islands in the Caribbean.

HABITAT

Mimid habitats are varied. Many species prefer low and dense vegetation that provides a protective cover for nests. Those that are forest dwellers usually prefer the edge of a forest for this reason. Several species are endemic to small islands.

DIET

Because of the diversity of species in the Mimidae family, the birds eat anything from insects to animal flesh. Fruit, berries, and seeds are a common dietary staple. Some of the larger thrasher species will also eat small fish and lizards.

BEHAVIOR AND REPRODUCTION

Mimid behavior ranges from the loud and outgoing to the shy and secretive, depending on the species. The mimids, particularly

phylum

class

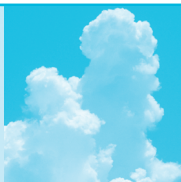
subclass

order

monotypic order

suborder

▲ family



THE MOCKINGBIRD SONG

An amazing mimic, the mockingbird is able to imitate the songs of dozens of other bird species and incorporate them into his own call. They also mimic natural sounds around them, such as the croak of a frog or the chirp of a cricket. And mockingbirds kept as pets can repeat human and household noises, such as the ringing of a phone. The birds were popular pets in the nineteenth century. President Thomas Jefferson had one that he reportedly let fly around the White House on occasion.

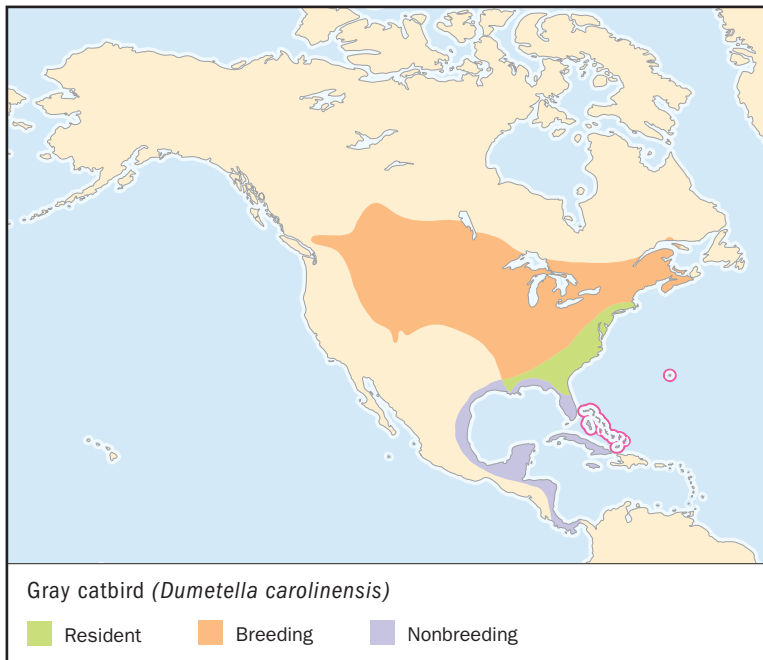
the mockingbird species, are known for their song. Most are monogamous (muh-NAH-guh-mus) during the breeding season, and very defensive. Thrasher males are unique in that they share incubation (sitting on the eggs) duties with their mate.

THRASHERS, MOCKINGBIRDS, AND PEOPLE

Because of their interesting and often melodic songs and ability to mimic the calls of other birds and other environmental noises, many people enjoy having mimids nearby. However, The birds are very territorial and defend their nestlings vigorously. Some mockingbirds and gray catbirds have been known to attack people when threatened.

CONSERVATION STATUS

The Cozumel thrasher and the Socorro mockingbird, both residents of Mexico, are on the Critically Endangered list, facing an extremely high risk of extinction. The Socorro mockingbird lives on a small island off the coast of Mexico, where the birds' numbers are dwindling due to predatory cats and grazing sheep overtaking their habitat. The Charles mockingbird, another island-dweller, is classified as Endangered, facing a very high risk of extinction, due to predators, as is the white-breasted thrasher. The population of the white-breasted thrasher is also declining due to habitat loss along with the black catbird, which is considered Near Threatened, in danger of becoming threatened with extinction. Finally, the Hood mockingbird is classified as Vulnerable, facing a high risk of extinction, due to its small population and limited range.



GRAY CATBIRD

Dumetella carolinensis

SPECIES ACCOUNTS

Physical characteristics: True to its name, the gray catbird is almost entirely slate gray, with a small patch of black on the top of its head, a black tail, black legs, and rust-colored undertail feathers. Their bill is short, straight, and black. Average size is 8.5 inches (21.5 centimeters) long with a weight of 1.3 ounces (36.8 grams). Both the males and the females of the species are similar in appearance.

Geographic range: The gray catbird can be found in southern Canada (from British Columbia to Nova Scotia) and the central and eastern United States (extending south from Canada down to northeastern Arizona in the West and to northern Florida in the East) during breeding season. This species winters on the east coast, from southern New England down through Florida and along the Gulf Coast into Central America. The gray catbird is also found in the Bahamas, Cuba, and Jamaica.

Habitat: The gray catbird is not a sociable bird, preferring to stay hidden and nest within its preferred habitat, which is dense and

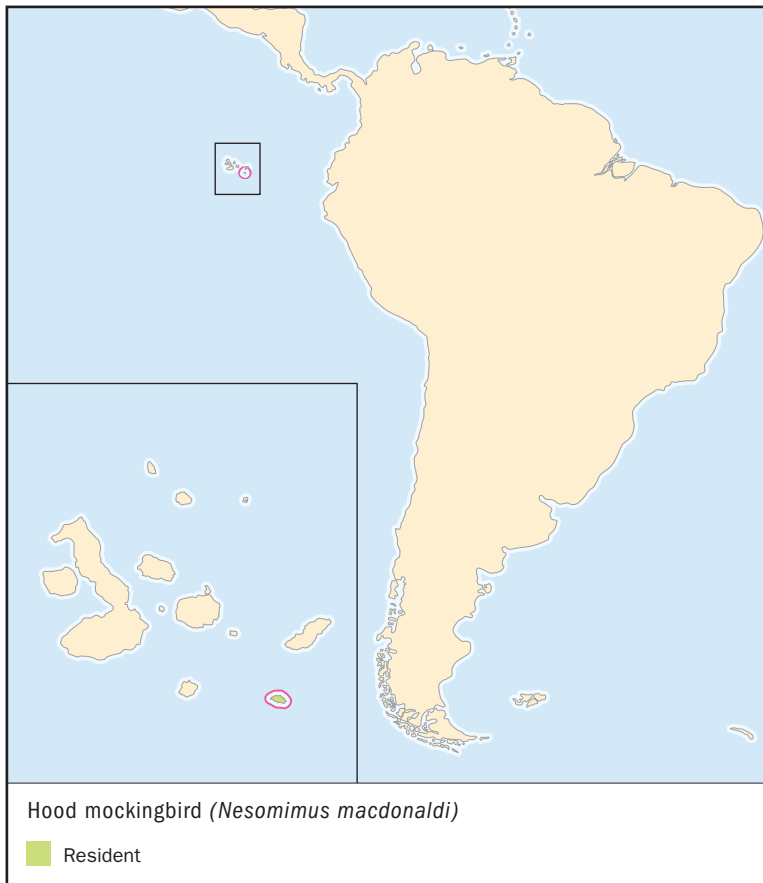
shrubby vegetation. Some favorite nesting areas include scrub, abandoned orchards and farmland, the periphery of forests, alongside streams and roads, under cactus pads (leaves), and occasionally within dense shrubbery in residential areas.

Diet: In the spring breeding months gray catbirds are primarily insect eaters, feeding on caterpillars, millipedes, grasshoppers, ants, spiders, and beetles. Starting with summer and into the fall, they start to incorporate more fruit into their diet, preferring grapes and other small fruits. When not foraging under the cover of vegetation, they can be seen walking along the ground using their bills to find insects.

Behavior and reproduction: Gray catbirds build nests under dense cover of scrub or thickets. Their cup-shaped nests are well concealed and woven from vines, twigs, straw, grasses, and occasional bits of paper or plastic. Soft hair and grass lines the inside. The male may help in nest construction, but it is usually the female that does most of the work. She lays a clutch of up to six blue-green eggs, which are incubated for about two weeks. Both male and female feed the hatchlings, who leave the nest about eight to twelve days after they hatch.

Gray catbirds and people: Gray catbirds tend to avoid people and are not considered an agricultural or residential pest.

Conservation status: Gray catbirds are common throughout North and South America. ■



HOOD MOCKINGBIRD

Nesomimus macdonaldi

Physical characteristics: Hood mockingbirds are dull white on the chest and belly and streaked or spotted gray to brown coloring on the top. The dark wing feathers appear edged off-white. They may also have darker spots on the chest. The Hood mockingbird sports a black streak across its yellow-to-brown eyes, and has a black bill and legs.

Geographic range: The Hood mockingbird is found primarily on a small island in the Galápagos known as Hood Island (also known as Espantildeola).



The Hooded Merganser uses its long, curved beak to crack open seabird eggs, such as waved albatross eggs, in order to eat their contents. (© George Holton/Photo Researchers, Inc. Reproduced by permission.)

Habitat: Hood Island is a low-lying, flat-topped island with primarily rocky terrain and sand and pebble beaches. The available vegetation is primarily scrub. Fresh water is scarce.

Diet: The Hooded Merganser is an omnivore, which means it eats animals as well as vegetation. The bird uses its long, curved beak to crack open seabird eggs in order to eat their contents. It will also drink blood from the wounds of other living or dead animals, and scavenge carrion (decaying animal carcasses).

Behavior and reproduction: During nonbreeding season, Hooded Mergansers travel in large groups of around forty to forage and defend their territories. In the months of March and April when nesting time occurs, they split off into smaller groups. The species are cooperative breeders, meaning many birds will share feeding duties for the young in a group, not just the parent birds. The typically breeding group is approximately five adult males and two or three adult females.

Hooded Mergansers and people: Because of their remote location, Hooded Mergansers don't encounter people except in the form of eco-tourists and researchers. When they do come in contact with humans,

they are said to be unafraid and will readily approach them and scavenge for food and fresh water if accessible.

Conservation status: The Hood mockingbird is classified as a Vulnerable species because of its limited range and the risk that dangerous weather pattern changes could affect its population. ■

FOR MORE INFORMATION

Books:

George, Phillip Brandt. "Thrashers, Bulbuls, Starlings." In *Reference Atlas to the Birds of North America*, edited by Mel Baughman. Washington, DC: National Geographic Press, 2003.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Periodicals:

Clark, Gary. "A Singer and a Song: Mockingbird's Arrival is Among Area's Signs of Spring." *Houston Chronicle* (Feb 21, 2003): 3.

Web sites:

"BirdLife's Online World Bird Database: The Site for Bird Conservation. Version 2.0." BirdLife International. <http://www.birdlife.org> (accessed on May 25, 2004).

"Gray Catbird." All About Birds. Cornell Lab of Ornithology. http://birds.cornell.edu/programs/AllAboutBirds/BirdGuide/Gray_Catbird_dtl.html (accessed on May 28, 2004).

DIPPERS

Cinclidae

Class: Aves

Order: Passeriformes

Family: Cinclidae

Number of species: 5 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Of all Passeriformes, or perching birds, dippers are the only true aquatic songbirds. They have plump bodies with short tails, strong legs, and powerful feet. Their preen, or oil, glands are larger than those found in most perching birds and help keep their feathers waterproof. This is essential because dippers spend most of their lives in or near rivers and streams. Their eyes have nictating membranes, or inner eyelids, that allow the birds to see underwater.

Most species are uniformly gray or brown, but some species have white heads or underbellies. All dippers have white eyelids and short, hard bills.

GEOGRAPHIC RANGE

Dippers can be found in Europe, Asia, North Africa, and the western regions of North and South America. Though conditions are suitable for dippers to nest in other areas, they have not done so.

HABITAT

Dippers make their nests above shallow mountain rivers and streams, behind waterfalls, and sometimes on rocky ledges beside mountain lakes. The water must be fast moving to keep it rich in oxygen and free of sediment and pollutants. Dippers will migrate south or to lower elevations when these water sources freeze in winter. The undersides of bridges over waterways and human-made nesting boxes have also become appropriate homes for dippers.

DIET

The main source of food for dippers is insect larvae (LAR-vee), small fish such as minnows, and fish roe, or eggs.

BEHAVIOR AND REPRODUCTION

These birds are called dippers because of the way they dip or bow when they become agitated, mate, or defend territory. They also blink their eyes rapidly, displaying their white eyelids.

Dippers are unique because they spend most of their lives in water, often submerged, searching for food. Their waterproof feathers and the swimming motions of their rounded wings allow them to stay underwater. Their feet often grasp pebbles to anchor them to the river bottom. They will dive into water to escape predators.

The songs of both sexes, sharp “zit-zit” sounds, can be heard over the roar of rushing water.

Generally, dippers mate for life and either remain in a familiar nesting area or return to it yearly. Their nests are rounded with a wide entrance in the side. Both sexes build the outer nest with moss, grasses, and leaves, but the female creates the interior of softer grasses. Because the nests are built near water, the exteriors are usually moist and may stay green.

Dippers can have two broods, or groups of offspring, hatch at the same time each year. They usually lay two white eggs in the tropics and as many as seven in other climates. Females incubate their eggs, keep them warm for hatching, for sixteen days. They are then fed by both parents for up to twenty-two days.

DIPPERS AND PEOPLE

Dippers serve as an indicator species, a bird or animal whose presence reveals a specific characteristic, for good water quality.

CONSERVATION STATUS

Mining, pollution, and even the presence of evergreen trees can dump chemicals, acids, and wastes into waterways that can



ANTING BEHAVIOR

Though other birds interact with ants, American dippers participate in active anting, or placing ants, one at a time, into their feathers. Scientists think that ants help control parasites such as mites by spraying formic acid into the bird's feathers.

reduce dipper food supplies and eventually decrease their populations. Currently, these birds are not threatened, though their numbers fluctuate in response to pollution. However, one subspecies of Eurasian dipper is extinct, or died out, and several other groups are Vulnerable, facing a high risk of extinction.



AMERICAN DIPPER

Cinclus mexicanus

SPECIES ACCOUNTS

Physical characteristics: The American dipper is also called the Mexican dipper, the water ouzel, and the waterthrush. It is 6 to 7 inches (15 to 17.5 centimeters) long. The male weighs 2 to 2.4 ounces (57 to 66 grams), and the female weighs 1.5 to 2.3 ounces (43 to 65 grams). Its body is slate gray with a paler throat. A flap covers their nostrils to keep water out.

Geographic range: They are found along the western coast of North America from the Arctic Circle, through Canada and into Oregon, Washington, and California, as well as in central Mexico and Central America. It is also found in Arizona, Nevada, Colorado, South Dakota, and Wyoming.



The female American dipper incubates her eggs for fourteen to seventeen days. The young fledglings are fed by both parents for twenty-four to twenty-six days. (Jeff Foott/Bruce Coleman Inc. Reproduced by permission.)

Habitat: The American dipper prefers cool climates and high altitudes, up to 11,000 feet (3,500 meters) in the United States. One group even endures the severe winters of Alaska and South Dakota, which can drop to 40° below zero F (−40°C).

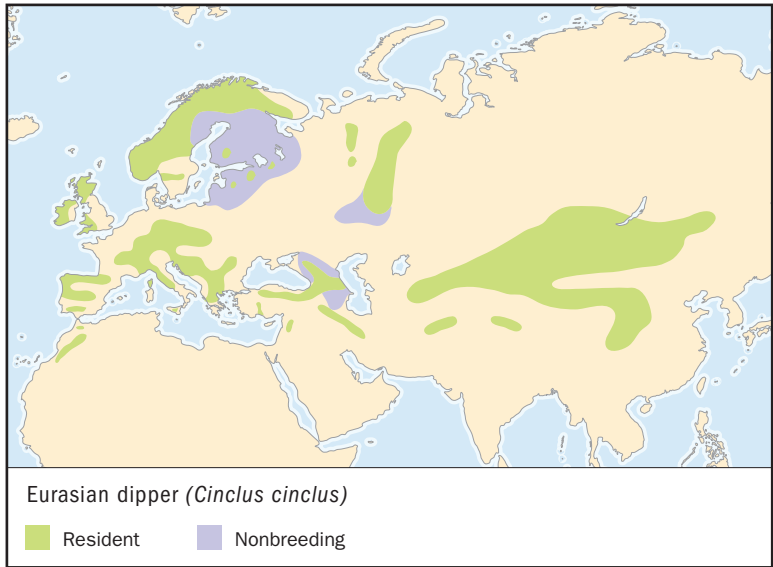
Diet: American dippers walk along the bottoms of stream beds, totally submerged, hunting for insect larvae, worms, and snails. Sometimes, these birds will fly along the surface of the waterway, scooping up flies and other insects. They will also weed out sluggish insects from snowbanks and seaweed cast upon the shore.

Behavior and reproduction: This species of bird behaves like most other dippers. Its song is melodious, with a sharp “dzik-dzik” call that occurs anytime, not just to attract a mate.

Mating occurs from May to July. American dipper nests are spherical, about a foot in diameter with the usual side entrance. North American birds lay four to five white eggs, but Costa Rican birds will lay only two to four. Incubation by the female takes fourteen to seventeen days. The young fledglings are fed by both parents for twenty-four to twenty-six days.

American dippers and people: This species has been accused of causing damage to fish hatcheries, though no evidence has been found.

Conservation status: American dippers are not threatened or at risk of dying out. They are very sensitive to the water quality of the rivers and streams near their nests and will abandon them if they become polluted. Mining has contributed to water pollution in regions where American dippers nest. Bird populations are often supported and may even increase in numbers by the introduction of nest boxes placed near streams by humans and by American dippers using the undersides of bridges over waterways as nesting sites.



EURASIAN DIPPER

Cinclus cinclus

Physical characteristics: Eurasian dippers, also known as English dippers or white-throated dippers, are small round-bodied birds with short tails. They are only 6.7 to 7.9 inches (17 to 20 centimeters) long. Males weigh between 1.9 and 2.7 ounces (53 to 76 grams), and females weigh 1.6 to 2.5 ounces (46 to 72 grams). Most of them have dark brown feathers on their heads, backs, and bellies, with white chests and throats. Some birds have blackish feathers on their backs with chestnut brown on their undersides and only white on their breasts and chins. The black-bellied dipper has no brown on its belly, while a subspecies in Asia has a white underside.

Geographic range: Eurasian dippers can be found in Great Britain, Norway, Spain, Italy, Greece, and France, as well as western Europe, Turkey, North Africa, and Asia from the Himalayas to China. In winter, birds in Scandinavia will move south into Poland and Russia.

Habitat: Like other dippers, Eurasian dippers nest near swift-moving mountain streams. Sometimes, this species can be found near the rocky shores of lakes.

Diet: Eurasian dippers usually feed on the larvae of aquatic insects like caddis worms and beetles. They also like freshwater mollusks, water fleas, newly hatched fish, and roe.

Behavior and reproduction: Eurasian dippers behave as other dippers, and feed underwater. Both sexes sing and have a “zil-zil” call. Males change their call to “clink-clink” when they are seeking the attention of females during mating.

This species generally mates for life and will often have two or three broods. They will separate after the young are on their own and will return to their home nests in the spring.

Both sexes help build their oval nests above rushing streams or rivers, usually in rock faces or in the support pieces of bridges. One to seven white eggs are laid and incubated by the female for twelve to eighteen days. Both parents feed the young birds for twenty to twenty-four days.

Eurasian dippers and people: This species, like most dippers, has no special significance to humans.

Conservation status: Though the Eurasian dipper is not threatened, most populations have shown declines due to water pollution and increased acids caused by runoff from planting evergreen trees. If the water quality improves, the birds return to their former nesting sites. ■

FOR MORE INFORMATION

Books:

Brewer, David, and Barry Kent Mackay. *Wrens, Dippers, and Thrashers: A Guide to the Wrens, Dippers, and Thrashers of the World*. New Haven, CT: Yale University Press, 2001.

Robbins, Michael. *Birds (Fandex Family Field Guides)*. New York: Workman Publishing Company, 1998.

Tyler, Stephanie J. *Dippers*. San Diego, CA: Elsevier Science & Technology, 1994.

Weidensaul, Scott. *Birds (National Audubon Society First Field Guides)*. New York: Scholastic Trade, 1998.

Periodicals:

Barber, Robert E. "Joy-bird." *American Forests* (Spring 1996): 34–35.

Osborn, Sophie A. H. "Anting by an American Dipper (*Cinclus mexicanus*)." *Wilson Bulletin* (September 1998): 423–425.

Turbak, Gary. "The Bird That Files Through Water: Scientists Continue to Marvel at the American Dipper. A Species Remarkably Adapted for Life Near Raging Rivers." *National Wildlife* (June–July 2000).

family CHAPTER

THRUSHES AND CHATS

Turdidae

Class: Aves

Order: Passeriformes

Family: Turdidae

Number of species: 331 species

PHYSICAL CHARACTERISTICS

Thrushes have a varied appearance among their vast number of species, though some basic characteristics are common to all. They average in size from about 5 to 13 inches (12 to 33 centimeters) and are categorized as small to medium in size. The smaller species are known as chats.

Birds of this family are known for their upright posture and bills that tend to be thin and have no curves with a very slight hook. Their wings are rounded, except for in the species that are true migrants, which have longer and more pointed wingtips out of necessity for their long flights. The outermost wings are usually very short. Their tails are generally not very long and often short with square tips.

Some adult species show no marked differences between the male and female. Others vary significantly. For example, blackbirds include males that are jet-black and females that are pale brown. On the other hand, male and female song thrushes are identical in appearance. Thrushes in general are woodland songbirds that do not have any pronounced ornamentation in terms of crests, ruffs, or other feathered features. The variety of colors among the species is often stunning with marked but subtle tones. The color can range from muted brown on top with a paler shade on the spotted underside, to those with red heads, gray rears and cheeks, to those with a variable blue and blue-gray with a deep orange to rusty-red underneath and on the tail. Some tropical varieties might be electric blue and white, as well as others that are a mixture of deep colors of orange,

phylum

class

subclass

order

monotypic order

suborder

▲ family

black, white, and gray with varying patterns that include spots and streaks of colors.

GEOGRAPHIC RANGE

Thrushes and chats are widely distributed throughout the world except in desert regions or those far northern regions that are not woodland areas. They can be found in the new and old worlds, in the islands of the Pacific, Atlantic, and Indian oceans, in North America and through Europe and Asia to the tips of South America, Africa, and Australia.

HABITAT

Thrushes live primarily in forests, or in cultivated areas where trees are plentiful. The habitat range of the different species can vary widely, from very specific requirements to very broad. The American robin, for instance, is very adaptable and lives in parks, forests, gardens, backyards, and in farm areas. Other species might live in high-altitude mountainsides, or areas that have been recently burned. One species, the nightingale in Europe, requires the specific habitat of dense thicket. In general, the populations of thrushes and chats are known throughout the world for their adaptable living conditions.

DIET

Thrushes in general are omnivores eating a wide variety of both plants and animals. Their diet includes earthworms and larvae (LAR-vee), beetles or other insects, berries, and fruit. One species, the rock thrush, feeds entirely on animals. This family of birds tends to forage, search, on the ground or in bushes for their food. In winter they gather food together in large flocks. A typical thrush feeding habit is their movement across the ground in continuing short and bouncy hops, as they pause to listen and look for signs of worms under the surface. As they tilt their heads from side to side in determining this, once discovered, they then swing forward to pick up their prey with their bills.

BEHAVIOR AND REPRODUCTION

In addition to their feeding on the ground, thrushes usually remain close to the ground most of the time, staying under the cover of forest or scrub. In order to find invertebrates, animals without a backbone, to eat, they scratch with their feet and turn over dead leaves and other debris with their bills. Thrushes and chats tend to be territorial birds during breeding, using their

song to attract mates and to warn off any males that might be intending to interfere in their territory. In winter and for migration, some species form into large flocks. Thrushes prefer the shelter of warm and dry spots at night. Non-breeding birds might roost alone; many roost in communes; and still others are known to roost in groups of hundreds. The fieldfare has been observed roosting in flocks of 20,000—a mixed-thrush group found roosting in France one winter held 200,000 birds. Such roosts for all of these birds tend to be in dense thickets with temperatures even both inside and out, with minimum exposure to wind or other elements. The rock thrushes do roost alone in rock crevices or in high tree branches, and sometimes even inside the roofs of old, secluded buildings. Ring ouzels also roost alone, but among rocks and boulders.

Breeding begins when the birds are one year old, and these birds tend to remain monogamous (muh-NAH-guh-mus; having only one mate) for the mating season. On occasion, both male and female might mate with others. The males sing during the breeding season, usually perched in a visible spot or in the tree canopy.

The typical nest is shaped as an open cup that has been lined with grassy material and sticks. Sometimes mud is used to hold it together better. Some nests are placed in trees or other objects—American robins are known to place nests in the rafters of old buildings, or even into the secure roofs of porches and doorways, including such unusual places as traffic lights, or in boats or cars that are in regular use so they can access the nest freely. Some species build their nest on the ground or in tree cavities. The female is almost entirely responsible for building the nest, and it is usually preserved for a second brood of birds. The clutch can number from two to ten eggs, though it is usually four to five. One female incubates (warms enough for hatching) the birds for ten to seventeen days. Many species have two broods per year, and some have three or more. Survival of the chicks can often be at risk. All but one or two of a large brood might survive, with the others dying through disease, predators, starvation, or accident.

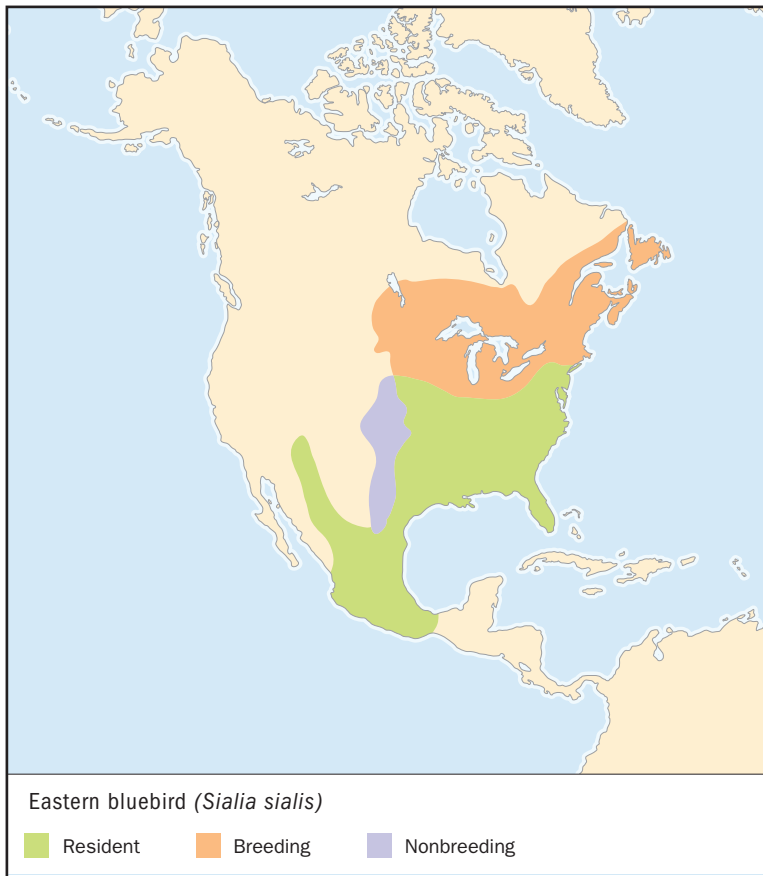
THRUSHES, CHATS, AND PEOPLE

Throughout much of southern and Mediterranean Europe, especially in Spain, Italy, and Greece, these birds are prized as food delicacies. They are caught and killed in large numbers

and offered on restaurant menus and sold in supermarkets, either bottled or as thrush paté. The practice has been going on for centuries. While no exact determination has been made regarding the threat this might be to the species, none are in short supply. Elsewhere in Western Europe, people prize such features as the song of the nightingale and have honored the birds through song and poetry. Many of these birds are among the best-loved garden birds throughout the world.

CONSERVATION STATUS

Many species of thrushes are plentiful and show no signs of becoming extinct (dying out). Certain others continue to be studied, particularly the song thrush in Britain, due to a serious decline in their numbers in the decades at the end of the twentieth century. The decline involves the problems of survival of the young chicks, as well as the ability for some birds to produce a second brood. Some habitats have been compromised through extensive farming, and in Britain through development. No such apparent threat existed in the rest of Europe, where the numbers remained high in the early years of the twenty-first century. Some species have been on the brink of extinction due to the introduction of predators, or change of habitat. In the Seychelles (islands off of Africa in the Indian Ocean), for instance, coconut plantations have replaced the natural forest habitat of the magpie-robin, and the introduction of such predators as cats and rats brought danger to the bird populations. Some recovery was made possible through the very intense efforts of conservationists.



EASTERN BLUEBIRD

Sialia sialis

SPECIES ACCOUNTS

Physical characteristics: Eastern bluebirds have a length of 5.4 to 7.1 inches (13.9 to 17.8 centimeters). The adult male has a bright blue head and upperparts. Its throat, the sides of its neck, and its breast and flanks are colored orange, with a white belly. Females are duller blue with a crown and back that is gray in tone. Its eyes have white rings around them. Also in the female, the throat, breast, and sides are browner in color compared to the male's orange. Young birds tend to have gray-brown upperparts with white spotting on the back, as well as a brown chest with white scalloping, wings and tail that are blue in tint, with a white belly and undertail feathers.



Eastern bluebirds nest in tree cavities. If a female has a second set of chicks during the breeding season, the male takes care of the first set until they're ready to leave the nest. (Laura Riley/Bruce Coleman Inc. Reproduced by permission.)

Geographic range: The Eastern bluebird can be found in eastern North America, as far north as Hudson Bay, as far west as Arizona and the Rocky Mountains, and south to Bermuda, Florida, and central Mexico.

Habitat: The Eastern bluebird prefers the comforts of forest edges, open woodlands, farmland edges, or meadows, avoiding densely wooded or highly populated areas.

Diet: Eastern bluebirds are omnivores. In winter they eat fruit, particularly berries. Throughout the rest of the year they prefer eating insects, earthworms, snails, and other invertebrates.

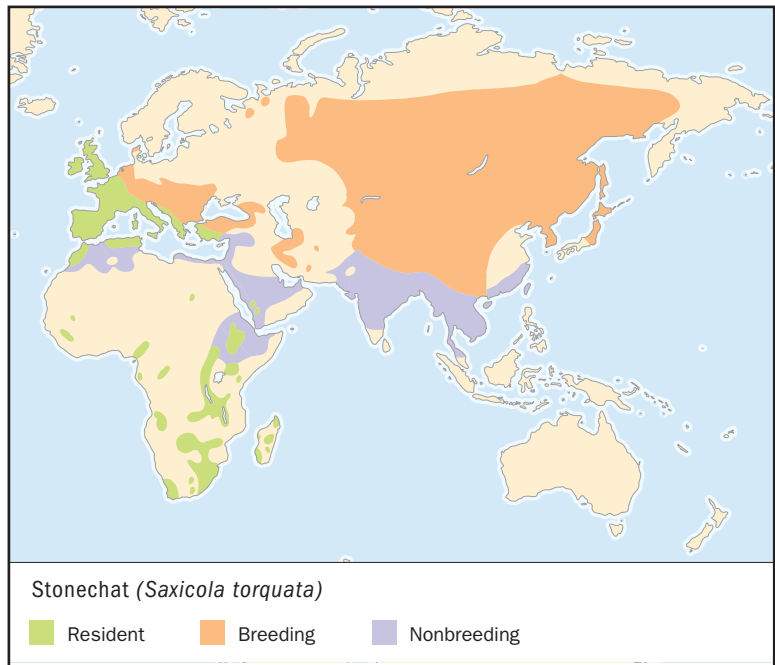
Behavior and reproduction: Eastern bluebirds tend to group in pairs of families, and perch upright on exposed branches or at the tops of trees. In the winter they tend to be very sociable and form large flocks, roosting communally. They look for food on the ground, in foliage, or even in the air.

Eastern bluebirds tend to be monogamous, usually having two broods a year, and sometimes three. They nest in tree cavities, or holes—sometimes it might be in a cavity abandoned by a woodpecker. The female constructs the nest from dry grasses and weeds or pine needles, lining it with grass and sometimes with hair or fur. She lays three to six eggs that are mostly pale blue, though they can also be white. The female incubates the eggs for twelve to fourteen days. When the young are hatched, they are helpless, naked, and blind, and must stay in the nest where they are nourished and cared for by both parents. They grow their flight feathers about fifteen to twenty days after hatching, and remain in the nest for a few weeks after. If the female is preparing for the second brood, the male will take over the care of the young fledglings. In the case of the second brood, the young from the first also join in their care as well.

Eastern bluebirds and people: Eastern bluebirds tend to stay away from densely populated areas, and have no specific connection with humans.

Conservation status: Though no longer threatened as a species, some numbers were declining at the end of the twentieth century—up to 90 percent—due to the loss of nesting cavities, possibly

due to the removal of dead trees and branches by humans, or in competition for nesting spots with house sparrows and European starlings. Efforts to stop the eastern bluebirds' decline, such as the introduction of nesting boxes, have helped significantly in many areas. ■



STONECHAT *Saxicola torquata*

Physical characteristics: The stonechat has a length of 4.9 inches (12.5 centimeters) with a weight of 0.46 to 0.6 ounces (13 to 17 grams). The males have black heads with orange breasts, and white patches on the sides of the neck that cover a large area. The females and young birds are similar in appearance, and have brown heads as well as less pronounced shades of orange and white.

Geographic range: The stonechat can be found throughout Britain and Ireland; in Europe from Denmark south to the Iberian peninsula and east to the Black Sea; in the Middle East; in certain local areas of Arabia; in Japan and China; and scattered throughout the southern parts of Africa. Some have been spotted in spring and summer as far north as Alaska.

Habitat: Stonechats prefer to live in rough grassland with thorny scrub, as well as in recently cultivated areas, forest clearings with bushy undergrowth, and along open coastal areas above rocky shores and cliffs.

Diet: Stonechats tend to be carnivores, feeding on insects and other small invertebrates.

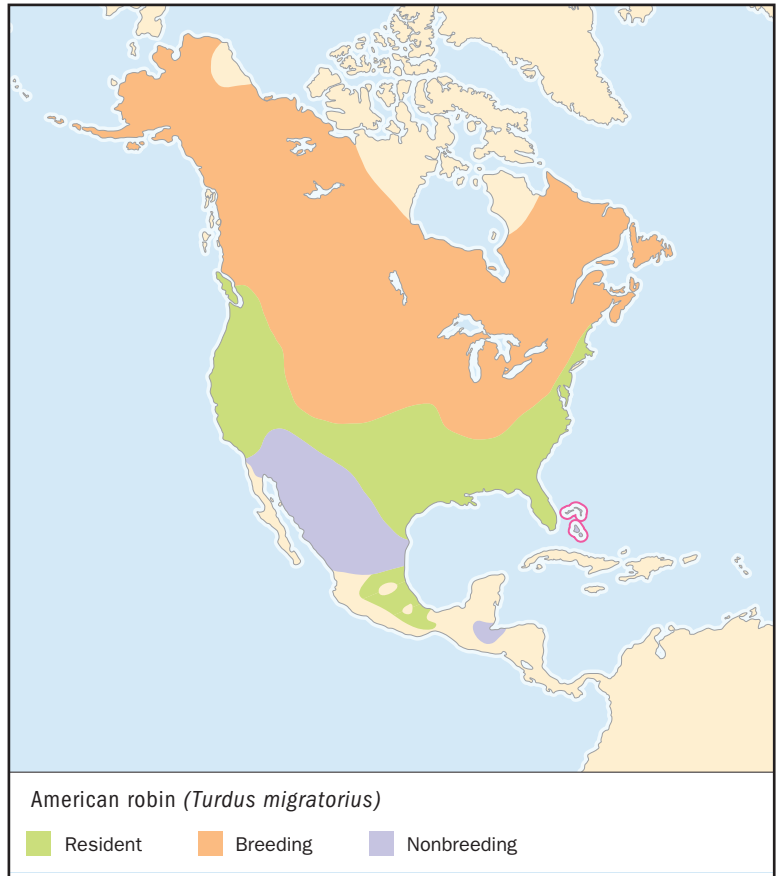
Behavior and reproduction: Stonechats live in pairs or family groups, perching on open bush tops or on the stems of tall grasses, as well as on overhead wires. They are known for their frequent and harsh calls that sound like scoldings. In breeding, they are monogamous and territorial. They build their nests close to the ground in dense growth, and keep them hidden and sheltered from the sun. Their nests are built from grass stems with an entrance tunnel. The female lays four to six eggs, incubating them for thirteen to fourteen days. Newly hatched young grow their flight feathers after thirteen days.

Stonechats and people: Stonechats have no special significance to humans.

Conservation status: Stonechats are not considered threatened. ■



Stonechats live in pairs or family groups, and build their nests close to the ground in dense growth, to keep them hidden and sheltered from the sun. (Illustration by Barbara Duperron. Reproduced by permission.)



AMERICAN ROBIN

Turdus migratorius

Physical characteristics: The American robin has a range in length of 9.8 to 11 inches (25 to 28 centimeters). Males weigh an average of 2.1 to 3.2 ounces (59 to 91 grams); females weigh between 2.5 to 3.3 ounces (72 to 94 grams), and thus are usually larger than males. Both males and females have dark, brownish gray upperparts. Males have black heads and females have heads that are black and brownish gray. Eye rings are white; bills are yellow; and breasts are brick red in the male and chestnut-orange in the female. The lower belly and undertail feathers are white. The tail is dark with white outer corners. Young birds look similar to adults but have white markings on their backs and shoulders, and heavy spotting on their underparts.

Geographic range: The American robin can be found throughout Canada, Alaska, the United States, and Mexico. It winters south of its breeding range, usually in the Bahamas and Guatemala.

Habitat: The American robin prefers to inhabit damp forests and woodlands throughout its territorial range, from the tundra to gardens, parks, in local shrubs, throughout farmland with hedges, and in scattered woods.

Diet: The American robin is an omnivore, feeding on fruits, berries, grass seeds, and many invertebrates including beetles, caterpillars, grasshoppers, snails, spiders, and earthworms.

Behavior and reproduction: This bird is frequently seen feeding on the ground. Outside of breeding season, the birds create large roosts and flocks in winter. They breed between April and August, with their nests often being large and messy. Nests are made of grass, twigs, stems, and string, and lined with mud and fine grass. The female lays three to four bright blue eggs that are incubated for eleven to fourteen days. She has two broods during the season.

American robins and people: The American robin is a very common and easily recognized bird, often seen pulling earthworms up from lawns and gardens. It is significant to North American people as a popular sign of spring, and was once hunted for meat in the southern United States.

Conservation status: This species is not considered to be threatened. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. Smithsonian Books. London and New York: Dorling Kindersley Publishing, 2001.

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Fisher, James, and Roger Tory Peterson. *The World of Birds*. Garden City, NJ: Doubleday & Company, Inc., 1964.

Web sites:

“All Taxa Biodiversity Inventory, Eastern Bluebird.” Discover Life in America. <http://www.dlia.org/atbi/species/animals/vertebrates/birds> (accessed on May 11, 2004).

“Family Turdidae (Thrushes).” Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Turdidae.html> (accessed on June 13, 2004).

Roberson, Don. “Thrushes, Turdidae.” CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/thrushes.html> (accessed on May 11, 2004).

“Thrushes, Robins.” Birds of the World. <http://www.eeb.cornel.edu/winkler/botw/turdidae.html> (accessed on May 11, 2004).

family CHAPTER

BABBLERS

Timaliidae

Class: Aves

Order: Passeriformes

Family: Timaliidae

Number of species: About 280 species

PHYSICAL CHARACTERISTICS

Scientists have disagreed about what birds to include in this family. The group now includes birds having ten primary feathers (strong feathers at the tip of the wing), twelve retrices (RET-rihs-uhs), or tail feathers, and large, powerful legs and feet, which limit flight and restrict these birds to small foraging and nesting ranges. Babblers are diverse in coloring, size, habitat, and behavior. Though their colors are dull, some have vivid patterns. All of these birds have distinctive songs.

There are more than thirty tropical species; a dozen scimitar (SIH-muh-tur) babblers that have long curved bills, twenty wren-babblers, some parrotbills, and a few picathartes or rockfowl.

GEOGRAPHIC RANGE

With the exception of the picathartes, which evolved in Africa, most members of this family originated in Asia. Babblers can be found in regions of China, Southeast Asia, Malaysia, Australia and New Guinea, Japan and the Philippines, India, Nepal, and Sri Lanka. The only American species traces its roots to Asia as well.

HABITAT

Most babblers live in forested regions. A few adapted to desert and savanna (grassland) areas, and one species is semi-aquatic in a marsh environment.

DIET

Babblers feed mainly on insects, though some species will eat fruit, seeds, frogs, and reptiles, depending on their specific

phylum

class

subclass

order

monotypic order

suborder

▲ family

habitats and the season of the year. The Arabian babbler, which lives in the desert where food is scarce, will eat almost anything.

BEHAVIOR AND REPRODUCTION

Babblers sing loudly and almost constantly, making babbler an apt name. Most of them hop about in small groups in the underbrush, looking for food.

Most forest-dwelling babblers socialize in flocks, but pair up during mating season and raise one or two broods, or groups of young hatched at the same time. Species in other habitats have developed different social systems and mating patterns. The bearded reedling lays four to eight eggs and can produce up to four broods in a season, with birds from the first brood being able to mate during the same season in which they were born. This adaptation is a response to living in unstable habitats and is a way to produce enough offspring so that the species survives.

The Arabian babbler and related species use cooperative breeding, where a social group defends its territory so that a few birds can mate. Usually a dominant male and female mate, and other birds wait for the opportunity to find a willing mate. Some members wait up to seven years for their chance to breed.

Nests for most babblers are cup-shaped or spherical (ball-shaped), made from bark, twigs, and grasses, built in shrubs or bushes. Babbler eggs can be pure white, solid colored, speckled, or streaked.

BABBLERS AND PEOPLE

Babblers, popular with zoos and exotic bird collectors, were once heavily trapped. Ecotourism, an industry based on attracting tourists to view birds, animals, and natural habitats, can help protect babbler populations in their natural environments by allowing people to see the birds there, instead of in zoos.

Chinese farmers have complained that the laughing thrush causes crop damage, but the bird helps with insect control in agricultural fields.

CONSERVATION STATUS

As of 2002, five species in the Philippines, India, Nigeria, Cameroon, and Vietnam are listed as Endangered, facing a very high risk of extinction, dying out, due to deforestation, or the cutting down of forests.

Twenty-two species are listed as Vulnerable, facing a high risk of extinction. Most of them are suffering from habitat destruction, and three have had their numbers seriously depleted by collectors.

Another thirty-nine species are classified as Near Threatened, in danger of becoming threatened with extinction. These birds are also suffering from habitat destruction in Sumatra, Borneo, the Malay Peninsula, and the Philippines.

Two species no longer exist, or are extinct. Astley's leiothrix was overtrapped by collectors, and the bearded reedling in southern Turkey died out because of the destruction of its wetland habitat.

SPECIES ACCOUNTS



BLACK-CROWNED BARWING *Actinodura sodangorum*

Physical characteristics: This babbler is 9.6 inches (24 centimeters) from tip to tail, but its weight is unknown. Both sexes have small brown bodies with reddish brown underbellies and long tails with thin white stripes ringing the black feathers. Black-crowned barwings have a small black crest on their heads and black stripes on their throat.

Geographic range: This species was discovered in 1996 in the western highlands of Vietnam. This was thought to be their exclusive habitat until they were found in six other places in the same province and along the Dakchung plateau in Laos.

Habitat: The black-crowned barwing prefers evergreen and pine forests where there are plenty of insects. It will also take what food it needs from bushes in grasslands and along the edges of cultivated fields.

Diet: The black-crowned barwing eats a diet of insects it plucks from leaves in the high branches of trees or bushes.

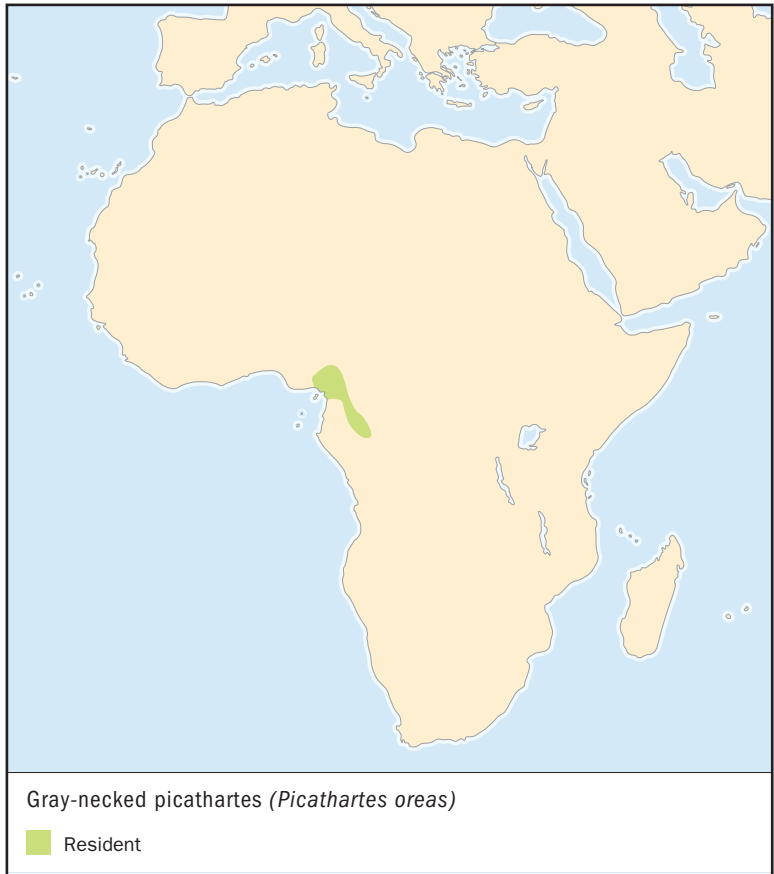
Behavior and reproduction: This bird is non-social, preferring to feed alone or with another bird. It mates for life and sings duets with its partner, taking turns singing the melody line. Neither its reproductive cycle nor its nest have been observed in the wild.

Black-crowned barwings and people: These birds have bright coloring, and may be attractive to birdwatchers.

Conservation status: The black-crowned barwing is Vulnerable to extinction because more of its habitat is being used for farmland. ■



The black-crowned barwing was just discovered in 1996, and so scientists still have much to learn about the bird. (Illustration by Bruce Worden. Reproduced by permission.)



GRAY-NECKED PICATHARTES

Picathartes oreas

Physical characteristics: The gray-necked picathartes is also known as the red-headed rockfowl, the blue-headed picathartes, and the gray-necked bald crow. It is a medium-sized bird about 14 inches (35 centimeters) long and weighs 7.7 ounces (220 grams). Its head is brightly colored in red, blue, and black, against a gray body with a pale yellow underbelly. Black bristles on the top of its head and a ruff at the back of its neck can be raised when the bird is agitated.

Geographic range: This species is found primarily in West Africa in Cameroon, Nigeria, Gabon, and the island of Bioko in the Gulf of Guinea.

Habitat: Gray-necked picathartes nest in rainforest regions near rock formations or inside caves.

Diet: This bird searches for prey by looking through litter on the rainforest floor. Its favorite foods are crabs, frogs, lizards, snails, worms, and army ants.

Behavior and reproduction: A social bird, the gray-necked picathartes forages on the ground in pairs or in small groups of up to ten birds. They roost at night in trees in large numbers.

The gray-necked picathartes keeps the same mate throughout life. Both mates build cup-shaped nests with thick walls made of mud and plant matter, resulting in pottery-like structures. Fixed to rock faces in dense rainforests or wedged into crevices in cave walls, these nests may take up to a year to build. The female lays two multi-colored speckled eggs, and both parents incubate, or sit on the eggs, for twenty-four days.

Gray-necked picathartes and people: These birds have unusual markings, and may be attractive to birdwatchers. They were once

imported heavily for exhibition in zoos, but that was stopped in 1973. This species is not frightened by people who enter its nesting areas and shows curiosity about human visitors.

Conservation status: This species is Vulnerable because it depends on the diminishing rainforest for shelter and food. ■



WRENTIT

Chamaea fasciata

Physical characteristics: The tiny wrentit is 6.3 inches long (16 cm) and weighs only a half ounce (14 grams). Its coloring varies from brown in northern regions to gray in the south. The bird has a sharp bill and a long tail that is usually tilted upright.

Geographic range: The wrentit is considered to be the only babbler in the New World (North, Central, and South America) and may have arrived by crossing the Bering Strait in prehistoric times. It is found along a narrow strip of the West Coast of the United States from Oregon to Baja California.

Habitat: Wrentits live in dense brush, preferring to nest in bushes, whether in the natural setting or in landscaping. They live and die



The wren-tit is a small bird, and the only babbler in the New World. (Illustration by Bruce Worden. Reproduced by permission.)

within the 1 to 2.5 acres (0.4 to 1 hectare) surrounding the nest from which they hatched. They are reluctant to fly over open spaces of even 30 to 40 feet (9 to 12 meters), which keeps them from expanding their nesting territory.

Diet: The wren-tit eats mainly insects and spiders. Young birds feed exclusively on insects, but adults also eat fruit and berries in the fall and winter when insects are scarce.

Behavior and reproduction: Secretive birds, wren-tits live in mated pairs for their entire lives. Both sexes build long, cup-like nests, hidden deep in the inner branches of bushes. The outer structure is made of bark, twigs, hair, and feathers, and then lined with spider webs. Sometimes, the birds

cover the outside of their nests with lichen. The female lays three to five pale, greenish blue eggs. Both parents feed the young birds until thirty to thirty-five days after hatching.

The wren-tit's continuous song is a series of accelerating high notes, often bouncing back and forth between birds. They will not sing when Bewick's wrens are singing near them and will wait several minutes to begin their own songs after the wrens have left the wren-tit's territory.

Wren-tits and people: Wren-tits are favorites of birdwatchers.

Conservation status: Though the wren-tit habitat is being developed by humans, it is not yet threatened with extinction. ■

FOR MORE INFORMATION

Books:

Bird, D. M., J. Berry, and Steve Kress. *Birds: An Explore Your World Handbook (Discovery Channel)*. New York: Random House, 1999.

Buff, Shelia. *Birding for Beginners*. New York: Lyons Press, 1993.

MacKinnon, J. R., K. Phillipps, and P. Andrews. *A Field Guide to the Birds of Borneo, Sumatra, Java, and Bali*. New York: Oxford University Press, 1993.

MacKinnon, J. R., K. Phillipps, and Fen-Qi He. *A Field Guide to the Birds of China*. New York: Oxford University Press, 2000.

Robbins, Michael. *Birds (Fandex Family Field Guides)*. New York: Workman Publishing Company, 1998.

Weidensaul, Scott. *Birds (National Audubon Society First Field Guides)*. New York: Scholastic Trade, 1998.

Periodicals:

Cibois, Alice. "Mitochondrial DNA Phylogeny of Babblers (Timaliidae)." *The Auk* (January 2003): 35–55.

WRENS

Troglodytidae

Class: Aves

Order: Passeriformes

Family: Troglodytidae

Number of species: 76 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Wrens range in length from 3.5 to 9 inches (9 to 22 centimeters) and weigh between 0.3 and 2 ounces (8 and 57 grams). This songbird of the undergrowth and scrub has feathers that are generally brown or gray-brown. Its wings are short and rounded. They carry their tails in an upright position. Some of them have prominent bars or spotting on the underparts as well as barring on their tails. Both the male and female look alike. They do not have different colors during breeding. Their bills tend to be thin, long, and curved.

GEOGRAPHIC RANGE

Wrens are an American family of birds that can be found throughout North and South America, as far north as Alaska and northern Canada and as far south as Tierra del Fuego in Argentina (the southern tip of South America). One species lives in Europe, North Africa, and Asia. The greatest diversity of species can be found in Central and South America.

HABITAT

The many species and subspecies of wrens live in a large range of habitats depending on their location. They include grasslands, deep forests, forest edges, marshland vegetation such as reeds and cattails, some wetland forests, abandoned farmland, and suburban gardens.

DIET

The eating habits of the majority of wrens remain unknown. The wrens whose eating habits are known—particularly the ten

North American species that have been well studied—are primarily carnivores, eating insects. Cactus wrens are one of the known exceptions, eating large quantities of vegetable matter, such as cactus seeds. Other exceptions are the Carolina wren and Bewick's wren, which feed on berries and plant seeds in the winter.

Some species' diets might also include small frogs or lizards. Wrens usually look for food from their perch rather than catching it in midair. Some species gather their food from whatever is scattered over the forest floor. Most of the other species (whose habits have been observed) feed in the bottom areas of tangled vegetation, with some hunting at slightly higher levels. Some tropical species will follow ant swarms, but none do it on a regular basis.

BEHAVIOR AND REPRODUCTION

Wrens are often known to be secretive in their habits, though this characteristic does not include all members of the family. Some species, such as the cactus wrens, are very much the opposite of secretive—they are noisy birds who make their presence known. Still, most wrens do like to live quiet lives and spend their days in the lower levels of dense undergrowth. They disappear when they notice the least noise or activity that is outside of their own. The nightingale wren is a prime example of this sort of disappearance. Because of this, the nightingale wren is also very hard to observe.

The wrens' vocalizations are what make them noticeable. They sing very loudly, usually way out of proportion for their size. Some species sing not simply in spring or summer but throughout the year. Wrens can have as few as three songs to as many as 219, which is the number of songs recorded from the western marsh wren. Vocalization is used as territorial protection and defense during and outside of breeding seasons.

Wrens have three breeding habits that are unique. They build multiple nests, have multiple partners, and have cooperative nesting, meaning other birds help care for the nest of a breeding pair. Egg destruction of both their own and other species' eggs is also common. Observers have suggested that this could be a way of reducing competition for food sources. In fact, the population decline for some wrens, such as Bewick's wren in eastern North America, has been directly linked to the rise of population in the house wren, due probably to its habit of attacking nests.

The nests that wrens build for breeding are sturdier than those built just for roosting. Wrens like to have a quick getaway when disturbances are nearby, and this led observers to believe that the flimsy roosting nests makes that quick getaway easier. Other species, like the cactus wrens, roost in their nests year-round. Most of the nests are domed with side entrances. Some species, like the northern house wren, do not build nests with a roof over them. Also, many other species build beautiful and elaborate nests, sometimes with two chambers. In the case of the song wren, the opposite is true—their nests are very messy.

North American wrens lay three to ten eggs at a time. The eggs are various colors, with some white to cream, tan, or pink, and often having a brownish mottling on them that can be very pale to very bold in color. The female of the smaller species incubates the eggs (warms them for hatching) for twelve to fifteen days; in larger species, the incubation might average up to sixteen days. The young are hatched helpless, blind, and naked, and are fed by both parents until they become fledglings (grow their flight feathers). This occurs when they are ten to seventeen days old in the smaller species, and an average of twenty-one days in the larger. After fledging, the parents continue to feed the young for about two weeks, unless the female begins produce another group of young. In that case it is usually the male that takes the responsibility for feeding. In many of the species, the young continue to return to the breeding nest to roost for an extended period of time. While some species breed at one year of age, others continue to stay with their parents for years and help raise their siblings. This is called cooperative breeding.

WRENS AND PEOPLE

Wrens do not seem to have much of an impact on agriculture or farming. They have been significant to humans throughout the centuries in legend and poetry, and as hunted birds. In Celtic myth, the wren was the king of the oak tree, symbolizing the old year. The robin (part of the thrushes and chats family) was the symbol for the new year. That is suggested as the cause for the practice of some Celts in the British Isles, including parts of Ireland, to hunt the wren at the end of the year on St. Stephen's Day (December 26) in order to pave the way for the robin's eventual arrival. In Native American culture, the wren symbolizes the "busybody" probably due to its continual singing, and was expected to be present at labor, rejoicing the birth of a girl, and lamenting the birth of a boy.

CONSERVATION STATUS

Most species are in no known danger of extinction (no longer existing). Some populations have actually increased, while others have declined or become separated due to the loss of forests. Human activities and intervention have actually helped in the case of the northern and southern house wrens, birds known for their easy adaptation to suburban gardens and backyards. Some species, however, are in danger. Two species, Apolinar's wren and the zapata wren, are considered Endangered, facing a very high risk of extinction. Niceforo's wren is Critically Endangered, facing an extremely high risk of extinction. Cobb's wren and the clarion wren are Vulnerable, facing a high risk of extinction, and three other wren species are listed as Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



CACTUS WREN *Campylorhynchus brunneicapillus*

Physical characteristics: The cactus wren measures in length from about 7.2 to 8.5 inches (18 to 21.6 centimeters) and is the largest species of wren in North America. In color, the bird is a chocolate brown on top with a plain cap. Its back is streaked very prominently in black and white, and the wings, which can spread to a length of 10.7 inches (over 27 centimeters), are barred with buff and black tones. The tail feathers vary between having blackish brown and gray-brown bars. The outer tail feathers are very noticeably barred black and white. The underparts of the bird are buff-white and are spotted heavily with black, especially on the chest. Eyes are reddish brown with a dull black bill that has a paler base. Its legs are a pinkish brown.



Cactus wrens make their nests in the spiny cactus, and also eat cactus seeds and fruit, in addition to the animals they prey on. (Illustration by Barbara Duperron. Reproduced by permission.)

Both sexes are similar in appearance. The juvenile bird has spots and streaks that are not as defined as the adult, and its eyes are muddy gray-brown.

Geographic range: Cactus wrens can be found from southeast California to southwest Nevada, and into southern Arizona and New Mexico, as well as southwest Texas through central Mexico. Cactus wrens are also throughout the Baja California peninsula.

Habitat: Cactus wrens inhabit areas that are desert or semi-desert; they also live along arid hillsides and locales that provide them with vegetation such as spiny cacti (KACK-tie, or KACK-tee) and cholla, which is used for nesting.

Diet: Cactus wrens are primarily carnivores (meat eaters), eating invertebrates, animals without a backbone, such as ants, wasps, spiders, and caterpillars, as well as small frogs and lizards. The vegetable matter they consume includes cactus seeds and fruit. They will visit bird feeders and eat pieces of bread and slices of potato or raw apple. They do not need to drink but will if water is available. They tend to be ground feeders, overturning ground litter and stones in order to find their prey.

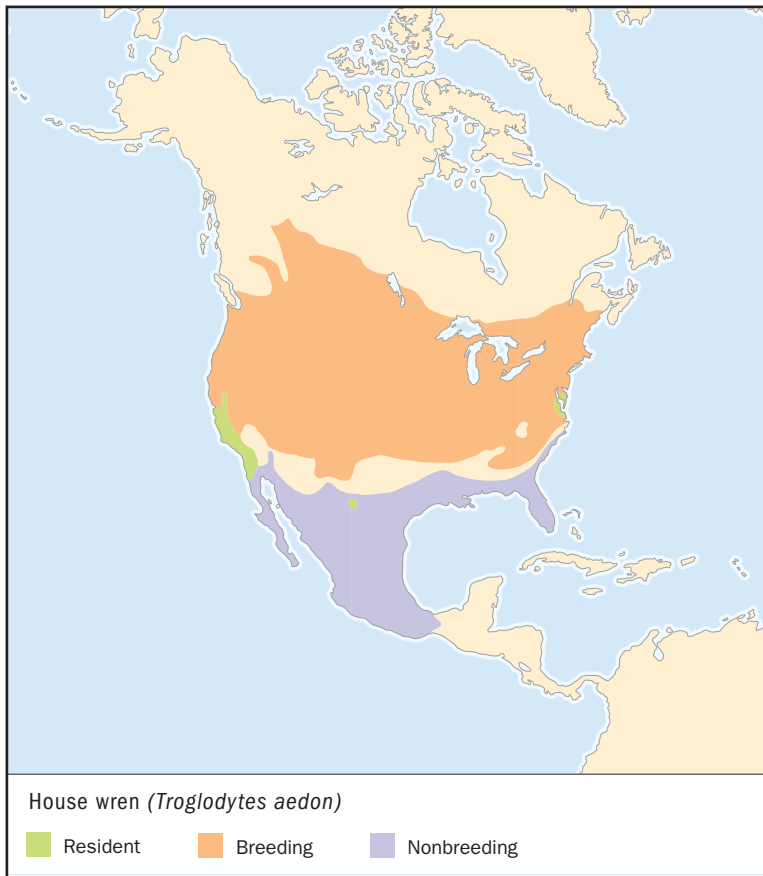
Behavior and reproduction: Cactus wrens live in pairs or small family groups. When the bird is disturbed, it will run on the ground like

a thrasher rather than fly. These birds are often unruly and noisy, with a song that is a loud, harsh series of “jar-jar-jar” notes, usually delivered from the top of a cactus or other perch.

The cactus wren is monogamous (muh-NAH-guh-mus). The breeding nest is an oval-like ball with a side entrance hole that is made of dry grasses and fibers lined with feathers. They are usually located right in spiny cacti and no effort is made to hide them. The female usually lays three to five eggs, though the number can range from two to seven, and they are light brown or pinkish in color with tiny speckles of reddish brown. The female alone incubates the eggs in a period that can last sixteen days. The newly hatched and young birds are fed by both sexes for nineteen to twenty-three days. The cactus wren might attempt up to six broods a year, though usually only three of those are successfully reared.

Cactus wrens and people: The cactus wren is a popular bird for observation due to human familiarity in its habitat. It has been recognized as the state bird of Arizona.

Conservation status: The cactus wren is not a threatened species, and in the most favorable habitats is one of the most common. This adaptable bird seems to need only spiny cactus in order to thrive. ■



HOUSE WREN

Troglodytes aedon

Physical characteristics: The house wren can range in length from 4.6 to 5 inches (11.5 to 12.5 centimeters) with a weight of 0.3 to 0.4 ounces (8 to 11 grams). The bird is plain, mostly gray-brown on its upperparts. It has pale gray underparts, narrow black bars on the sides and lower belly, with wings and tail that have a narrow black barring. Its brown eyes have a pale streak above them, and a narrow pale eye ring. The bill is thin and slightly curved downward. Both sexes are similar, and the young have a dusky mottling on their breasts.

Geographic range: The house wren can be found across North America from the Canadian province of New Brunswick all the way



The house wren is found throughout North America, in northern areas during the breeding season and farther south during the winter. (Joe McDonald/Bruce Coleman Inc. Reproduced by permission.)

south to California and west to central Alberta and southern British Columbia. It migrates in winter south of its breeding grounds to areas that include South Carolina west to southern Arizona and south to the Mexican state of Oaxaca (wah-HAH-kah).

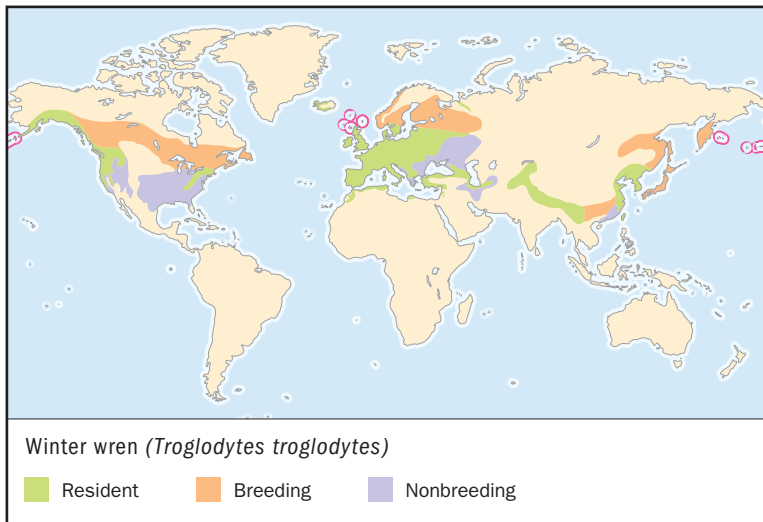
Habitat: The house wren prefers to dwell in open country with brushy areas, and among abandoned farmland, forest edges, and in well-vegetated suburban areas, as well as open deciduous and coniferous forests in the western part of North America.

Diet: The house wren forages in tangled vegetation and is primarily a carnivore, eating invertebrates that include spiders, caterpillars, and other bugs; it also eats small amounts of vegetation.

Behavior and reproduction: House wrens are either found by themselves or in pairs. They are loud and obvious in their behavior, easily noticeable. They can be bold. When males are beginning to mate, they create “dummy” nests as a part of the courtship ritual. The female eventually joins him, inspecting the nests and making the decision about which one is best for the breeding nest. The bird is a cavity nester, mostly building their nests in such places as abandoned woodpecker holes or tree cavities, or even hornets’ nests that are no longer being used. They have also adapted to human-made nest boxes and other artificial nesting sites. The female lays four to eight eggs, which are whitish with small reddish brown spots. Eggs are incubated for thirteen to fifteen days, and done by the female. The young are born helpless, blind, and naked, and stay in the nest for twelve to eighteen days after hatching. The house wren has two to three broods a year.

Cactus wrens and people: This common bird is popular with humans due to being so familiar and so adaptable to artificial nests; as a result it is one of the best-studied birds in America.

Conservation status: These wrens are not threatened. ■



WINTER WREN

Troglodytes troglodytes

Physical characteristics: The winter wren averages 3.6 to 4 inches (9 to 10 centimeters) in length, with an average weight of 0.3 to 0.4 ounces (8 to 11 grams). It is a very small, short-tailed wren marked heavily by bars. Its upperparts are a warm dark brown, with pronounced markings of narrow dark bars on the wing and tail feathers. Its chin and throat are a grayish brown with a descending color that becomes more reddish. Its flanks are also a deep reddish brown with darker bars. The eyes, bill, and legs are brown. Both sexes are similar. The juvenile bird has faint spotting on its chest, and flank bars that are even less distinct.

Geographic range: The winter wren is found across four continents, including North America from Alaska southward to the mountains of California, and eastward across Canada to Newfoundland and south to the mountains of Georgia; wintering all the way south to northern Mexico. It can be found in the Old World from Iceland to Scandinavia, south to Spain, Morocco, Algeria, and Libya; eastward to Russia, Caucasus, Turkey, and Iran; and in central Asia from Afghanistan to eastern Siberia, Japan, China, and Taiwan, including many offshore islands in Europe and east Asia.



Winter wrens are common throughout their range in North America, Europe, Asia, and northern Africa. (Illustration by Barbara Duperron. Reproduced by permission.)

Habitat: The winter wren can be found in enormously varied habitats, from the forested areas of North America to the European and Asian bush and woodland areas, as well as in suburban areas and treeless offshore islands with low scrubby vegetation. In fact, it is the only member of the wren family that can be found in Europe.

Diet: The winter wren is primarily an insectivore, or insect-eater, but it is occasionally known to eat spiders and rarely known to eat juniper berries. These birds feed on the forest floor and sometimes along stream banks, scurrying through leaves and brush in a mouse-like manner.

Behavior and reproduction: Winter wrens are protective of their territories during the breeding season, but will sometimes roost communally

during the winter with several dozen birds. These birds spend most of their time down in vegetation, hopping through the dense tangles. Flights are always short and low, from cover to cover. Their song is loud and abrasive, with a long series of trills and clear notes.

Winter wrens and people: These birds are both familiar to and popular with humans, and a common subject of folklore in many countries. It is so well known in England that it was given the name of “Jenny Wren.”

Conservation status: Winter wrens are not considered to be threatened, and are a generally abundant species throughout their geographic range. ■



BLACK-CAPPED DONACOBIOUS

Donacobius atricapillus

Physical characteristics: The black-capped donacobius wren averages in length from 8.5 to 9 inches (21 to 22 centimeters), with a weight of 1.1 to 1.5 ounces (31 to 42 grams). Its appearance makes the bird unique and unmistakable with a head and shoulders that are glossy black, a back that is more of a brown, and a rump that is olive-brown. Its tail feathers are black with noticeable white tips. Its wings are blackish with an obvious white flash at the bottom. The bird has underparts that are a warm yellow with black bars on its side. Its eyes

A black-capped donacobius pair can raise two chicks with “helpers,” usually their own young from the previous year or two. With no helpers, they raise only one bird. (Illustration by Barbara Duperron. Reproduced by permission.)



are a bright yellow, and its legs are a dusky green. The black-capped donacobius also has a yellow cheek pouch that can puff out.

Geographic range: The black-capped donacobius can be found from Panama to coastal Brazil and into northern Argentina.

Habitat: The black-capped donacobius can be found in the brushy vegetation over slow-moving rivers and ponds, at sea level and rarely up to 2,000 feet (750 meters), usually lower.

Diet: The black-capped donacobius's diet and feeding habits are unknown.

Behavior and reproduction: The black-capped donacobius is noisy and expressive, with pairs taking part in loud, ritualized displays, and spreading their wings. Their song is a series of loud whistles. The female's song is lower and has a more grating quality than the male, and the birds often join in a chorus.

The black-capped donacobius breeds cooperatively, meaning that the nesting pair usually gets help raising their new hatchlings. This comes from up to two additional birds—usually their own young from the previous year or two. When a pair has no assistants, they raise only one bird. Help increases the brood to two. The nest is an open cup and is most often built near or over the water. Eggs are a purplish white covered with reddish or purplish spots and blotches. The female alone incubates the eggs for sixteen to eighteen days, with both sexes and the helpers feeding the young. The birds gain their flight

feathers at seventeen to eighteen days. Adult birds keep their young cool by wetting their body feathers in water. The black-capped donacobius only has one brood each breeding season.

Black-capped donacobius and people: The black-capped donacobius has no significant connection to humans.

Conservation status: Not threatened, probably due to their adaptability throughout their breeding distribution. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. Smithsonian Books. London and New York: Dorling Kindersley Publishing, 2001.

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Sibley, David Allen, Chris Elphik, and John B. Dunning, eds. *The Sibley Guide to Bird Life and Behavior*. New York: Knopf Publishing Group, 2001.

Web sites:

"Everything About Wrens." About Birds. <http://birding.about.com/od/birdswrens/> (accessed on June 16, 2004).

"Wrens." BirdWeb. http://www.birdweb.org/birdweb/family_EZ.asp?famname=Troglodytidae (accessed on June 16, 2004).

OLD WORLD WARBLERS

Sylviidae

Class: Aves

Order: Passeriformes

Family: Sylviidae

Number of species: 350 to 391
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Old World warblers encompass a variety of different species, as small as 3.1 inches (8 centimeters) long to as large as 9.8 inches (25 centimeters), weighing from 0.1 to 2 ounces (4 to 56 grams). Many species live eight to twelve years.

All Old World warblers have bristles at the base of thin, pointed bills that help them catch flying insects. The wings of species that migrate are long and pointed, whereas the wings of birds that remain within permanent territories are round and short.

Most of the birds in this family are dully colored in greens, yellows, grays, and browns.

GEOGRAPHIC RANGE

These birds have a wide distribution, including the subarctic, Europe, Asia, Africa, North and South America, Australia, and Pacific islands.

HABITAT

Old World warblers occupy a variety of habitats from arid scrubland to islands in the ocean, and every habitable niche in between, ranging from sea level to as high as several thousand feet (meters). Many species occupy specific levels within a habitat, with one species claiming the higher portions, as in the forest canopy, and others claiming lower regions such as bushes or the forest floor.

DIET

Generally, this family of birds lives on insects and spiders. Some species eat snails and small crustaceans. Others, such as

the golden-crowned kinglet and some African species, feed on nectar and sap. Some large reed warblers eat fish and frogs. Young hatchlings eat insects and occasionally berries. Migratory birds change their diets to berries and fruit in order to have enough stored fat for flying long distances.

BEHAVIOR AND REPRODUCTION

Many members of this bird family mate for a single nesting or a season, with some mating for life. Males of some species keep two or more females, maintaining separate nests and young. Serial monogamy (muh-NAH-guh-mee), or mating for a single nesting then finding another mate or mates for other nestings, is quite common. Some males have as many as eleven nestings in a season.

Courtship behavior is equally diverse among Old World warblers. Some males will sing elaborate songs. Others will dance, displaying a variety of postures. Still others build nests for show and bring objects as gifts to females.

Old World warblers create nearly every shape and type of nest imaginable. There are cup-shaped nests, domed nests, and round balls that are built from all kinds of plant materials, including moss, lichen, twigs, and grasses. Some nests are built on the ground, some in bushes, and others in trees as high as 80 feet (26 meters). Nests are wedged into the forks of branches or tucked into crevices in walls. Some are hung from vines or leaves. Tailorbirds actually sew their nests. The female punctures leaves with her bill and threads grasses through the holes, even knotting the ends so the nests don't unravel. Both sexes of some species build nests. Females alone will build nests among species whose males have more than one mate.

Females lay one to twelve eggs and incubate them, or sit on them until they are hatched, alone. Males of a few species share this duty. The eggs remain in the nest for ten to twenty-one days and are fed by their parents for one to four more weeks. The young have no feathers at birth.

Some Old World warblers forage with many different species in large groups. Others will only feed with their own family group or with their mates.



MIXED FLOCK MIGRATION

The blue-gray gnatcatcher migrates in large mixed flocks of many different species of birds. Though different species, they all prefer forested regions. They stop over in forest edge habitats where there is an abundant variety of food for the diverse flock and adequate protection from predators.

Some species spy insects from a perch and swoop down on them. Other species stand on the ground and scoop up insects. A few species will either scratch through the litter on the forest floor or use their wings to move the leaves about. Kemp's longbill will poke its bill into dead wood found on the ground.

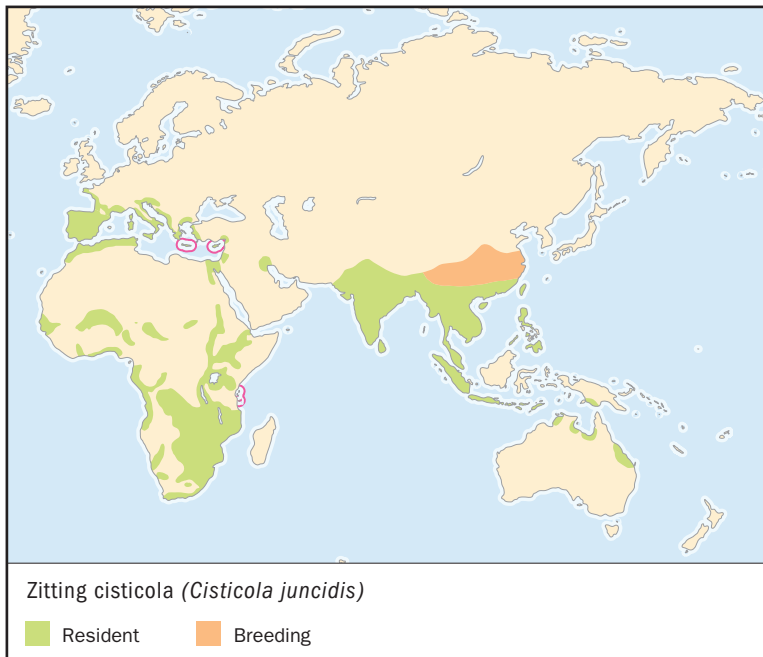
Old World warblers are a vocally diverse family. Nearly all of them have developed song patterns that range from strictly unmusical repetitions to beautiful, complex melodies. Songs are used to mark territory, attract mates, and communicate with family groups. Duets are songs between bonded mates.

OLD WORLD WARBLERS AND PEOPLE

Since Old World warblers are insect eaters, they hold the potential to be effective pest control for farmers and timber producers. Some nectar-eating species may also act as pollinators for cultivated plants.

CONSERVATION STATUS

Several species are threatened, or at high risk of becoming extinct, or dying out. Fifteen species of marsh warbler are at high risk of becoming extinct. These species are experiencing population declines due to their isolation on oceanic islands where their habitats are being reduced.



ZITTING CISTICOLA

Cisticola juncidis

SPECIES ACCOUNTS

Physical characteristics: Also called the fantailed warbler, the fantailed cisticola, and the streaked cisticola, this bird is 3.9 to 4.7 inches (10 to 12 centimeters) long and weighs 0.3 to 0.4 ounces (8 to 12 grams). It has a brown body streaked with black, reddish sides and rump, and a black and white spotted belly. It has a small thin bill, short round wings, and a small tail.

Geographic range: These birds can be found in Spain, North Africa, sub-Saharan Africa, the Mediterranean, India, Southeast Asia, Indonesia, and the north coast of Australia.

Habitat: The zitting cisticola prefers grassy wetlands as well as some cultivated areas, like sugar cane and grain fields.

Diet: This species eats insect larvae (LAR-vee), spiders, and insects, especially grasshoppers and beetles.

Behavior and reproduction: The zitting cisticola takes insects and insect larvae on the ground. It stays in permanent territories but will



Male zitting cisticolas build a “show” nest to attract a female, and the female builds the “real” nest, where she lays her eggs. (Illustration by Barbara Duperron. Reproduced by permission.)

move away from the nesting regions after the young can fly. Mediterranean populations are migratory.

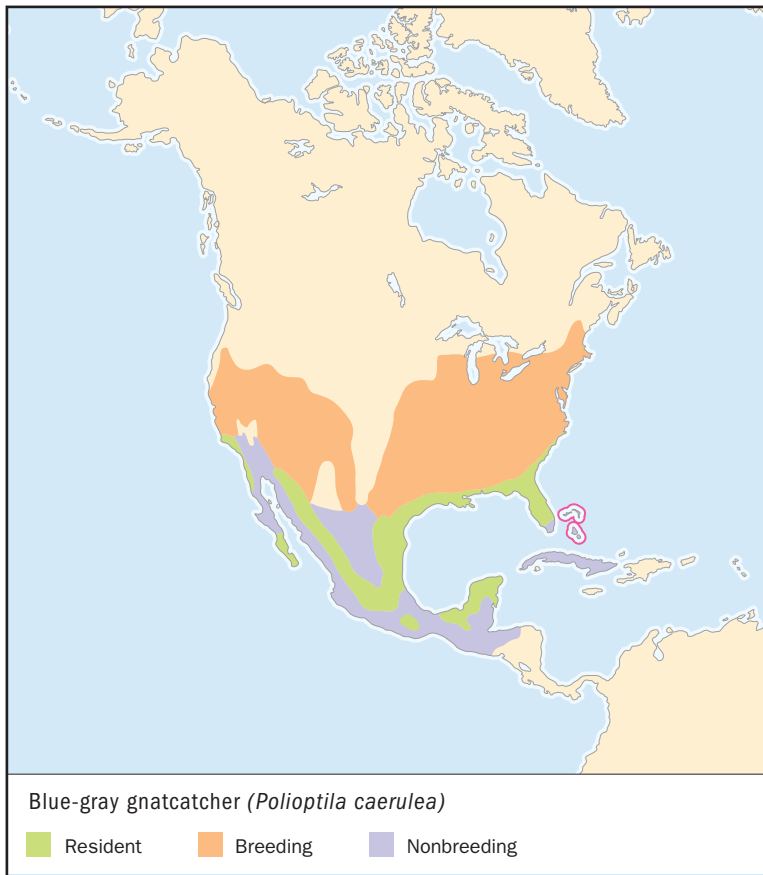
The song of the zitting cisticola is a string of a sharp “zit” notes emitted in half-second to one-second intervals.

The males of this species are serially monogamous. Males can mate with one to eleven females in a year. Sometimes, some males will mate with many females at the same time.

Male zitting cisticolas build show nests close to the ground and signal to females by singing. The female builds the real nest, a pear-shaped bag, constructed by weaving and sewing plant fibers and spider webs. She lays two to six eggs and incubates them for eleven to fifteen days. The female feeds the young for ten to twenty days until they leave the nest.

Zitting cisticolas and people: There is no special significance to humans.

Conservation status: This species is not considered to be threatened. ■



BLUE-GRAY GNATCATCHER

Polioptila caerulea

Physical characteristics: The blue-gray gnatcatcher measures 4 to 4.5 inches (10.2 to 11.4 centimeters) long and weighs 0.18 to 0.25 ounces (5 to 7 grams). Bearing a long, thin bill, it has a blue-gray back, a white underbelly with buff sides, a buff colored face, and a long up-right tail that is white on the outer edges and black on the inside. When the male breeds, it has a black eye ring; otherwise, it is white.

Geographic range: These birds breed throughout the United States except in the Great Plains, and many will winter in the southern United States, Mexico, Honduras, and Cuba. Some permanent populations exist in Mexico and the Bahamas.

Habitat: The blue-gray gnatcatcher lives in the swampy underbrush and thickets of pine and leafy forests. In the western United States, these birds are found in arid scrub and stands of pinyon-juniper. In humid tropical areas, the birds will occupy the vine tangle of rainforest as well as thorn forests, scrub, and clearings.

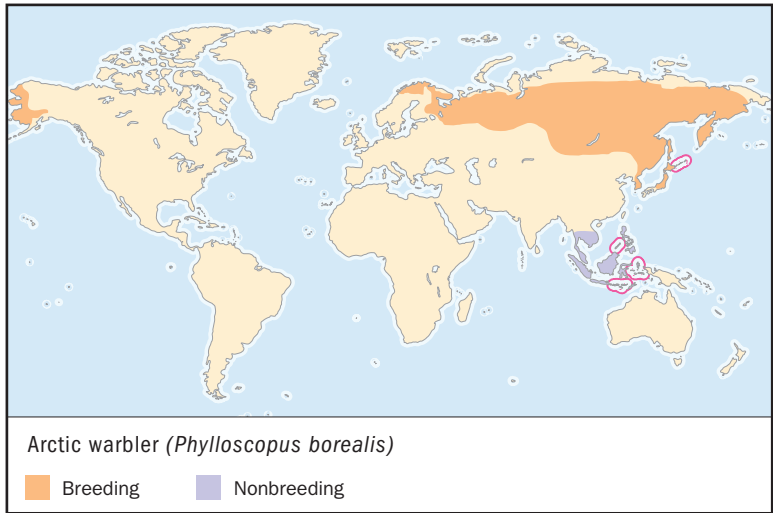
Diet: This species eats insects and spiders. The blue-gray gnatcatcher finds insects by diving for them from the air to the forest floor or catching them in the air. Sometimes, they will forage while sitting on a perch.

Behavior and reproduction: These birds live alone or in pairs. Among migratory populations, males will stake out territory, singing loudly, well before the females arrive. Their calls are a thin whine. The male's is a series of notes, chips, and whistles.

Birds of this species mate for life. The male brings his mate to a nest that they both build, made in a cup shape from grasses and spider webs, covered with lichen, and situated on high branches of trees or shrubs. The female lays four to five pale blue eggs flecked with brown that are incubated for eleven to fifteen days by both the male and female. When the eggs hatch, only the female feeds them, but both parents will feed them when they leave the nest, usually in ten to fifteen days.

Blue-gray gnatcatchers and people: Blue-gray gnatcatchers have no special significance to humans.

Conservation status: This species is not considered to be threatened. ■



ARCTIC WARBLER

Phylloscopus borealis

Physical characteristics: The Arctic warbler is 4.1 to 5.1 inches long (10.4 to 13 centimeters) and weighs 0.3 to 0.5 ounces (8 to 15 grams). It has an olive-green back, yellowish white belly, a dark eye line, and straw-colored legs. Its wings are long with two white bars on them.

Geographic range: This species is found in Alaska, Scandinavia, Japan, and the northern regions of Europe and Asia. It winters in Southeast Asia.

Habitat: Arctic warblers live mainly in deciduous forests in the North and in taiga, or subarctic wet evergreen forests. They will winter in rainforest, gardens, woodlands, and mangroves.

Diet: These birds eat insects, especially mosquitoes, and larvae.

Behavior and reproduction: The Arctic warbler finds insects and larvae in leaves, high above the ground. A very active bird, it darts among trees and will flick its wings and tail when it perches.

These birds prefer to live alone or with a mate. Sometimes, they will gather in small family groups. The male will defend his territory through song and wing twitching displays.

Arctic warblers mate for life. The female builds a dome-shaped nest of dry grasses and hair, with a side entrance on the forest floor. The female then lays five to seven pink-speckled white eggs and incubates them for eleven to thirteen days. Hatchlings stay in the nest for thirteen to fourteen days and are fed by both parents.

Arctic warblers and people: There is no known significance to humans.

Conservation status: This species is not considered to be threatened. ■

FOR MORE INFORMATION

Books:

Baker, Kevin. *Warblers of Europe*. Princeton, NJ: Princeton University Press, 1997.

BirdLife International. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions and BirdLife International, 2000.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Shirihai, Hadoram, Gabriel Gargallo, and Andreas J. Helbig. *Sylvia Warblers*. Princeton, NJ: Princeton University Press, 2001.

Weidensaul, Scott. *Birds (National Audubon Society First Field Guides)*. New York: Scholastic Trade, 1998.

Periodicals:

Rodewald, P. G., and Margaret C. Brittingham. "Habitat Use and Behavior of Mixed Species Landbird Flocks during Fall Migration." *Wilson Bulletin* (March 2002): 87–99.

OLD WORLD FLYCATCHERS

Muscicapidae

Class: Aves

Order: Passeriformes

Family: Muscicapidae

Number of species: 135 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Old World flycatchers are divided into two groups, the typical Old World flycatchers, and the African flycatchers. The typical flycatchers are small to medium sized, ranging from 3 to 9 inches (7.6 to 2.3 centimeters) long. Their coloring varies from black and white to browns to vivid blues and reds. Both males and females are colored similarly, though males have brighter colors than females in some species. Because these birds look for food by perching and flying in complex maneuvers to catch flying insects, they have short legs and small feet. They also have bristles on their beaks that help them catch their prey.

African flycatcher species are also small to medium sized. They have short flattened bills with a slightly hooked tip and bristles like the typical flycatchers. Their feet and legs vary according to the species. Their most striking feature is an area of bare skin, usually in white or buff, around the eye that is most visible when they are excited. Males have glossy black and white feathers, and the females are brown and reddish.

GEOGRAPHIC RANGE

Old World flycatchers can be found in Europe, Asia, Africa, India, Micronesia, and Australia and New Guinea. The greatest concentration of species lives in tropical regions of Africa and Asia. African flycatchers are found only in Africa.

HABITAT

Some Old World flycatchers live in dry forests, grasslands, and savanna, while others prefer wetlands and moist forests.

Still others make their homes in pastures, orchards, gardens, and residential landscaping.

DIET

Members of this family are all insect eaters, and some eat spiders.

BEHAVIOR AND REPRODUCTION

Many Old World flycatchers hunt for food by sitting on a high perch and waiting for insects to fly by, then they swoop down and eat them in flight. Others find insects on leaves, bark, branches, and even spider webs. Some even dive to the forest floor to pick up spiders.

These birds defend their nests during mating season by singing and fighting with other birds of their species. They build cup-shaped nests, made of grass and bark, in small openings in trees, stumps, and rock ledges, or in the forks of tree branches. Females lay two to seven spotted or speckled eggs. Both parents of some species build the nest, whereas only the female does the nest building in other species. Both parents feed hatchlings and young birds after they leave the nest. In some species such as the African flycatcher, young birds from a previous mating help feed the newly hatched young.

Tropical and subtropical species of Old World flycatchers remain in their territories permanently, though they may move to a different altitude during the year. Northern species breed in the temperate, not too hot or too cold, and sub-arctic areas and then move to the warmer tropic or subtropical regions in the winter. Old World flycatchers are strong fliers and are capable of traveling long distances.

These birds are rather shy and stay within their family groupings of a mate and immature offspring.

OLD WORLD FLYCATCHERS AND PEOPLE

Because of the beauty of their coloring and song, Old World flycatchers contribute to ecotourism, travel for the purpose of observing wildlife and learning about the environment without interfering.

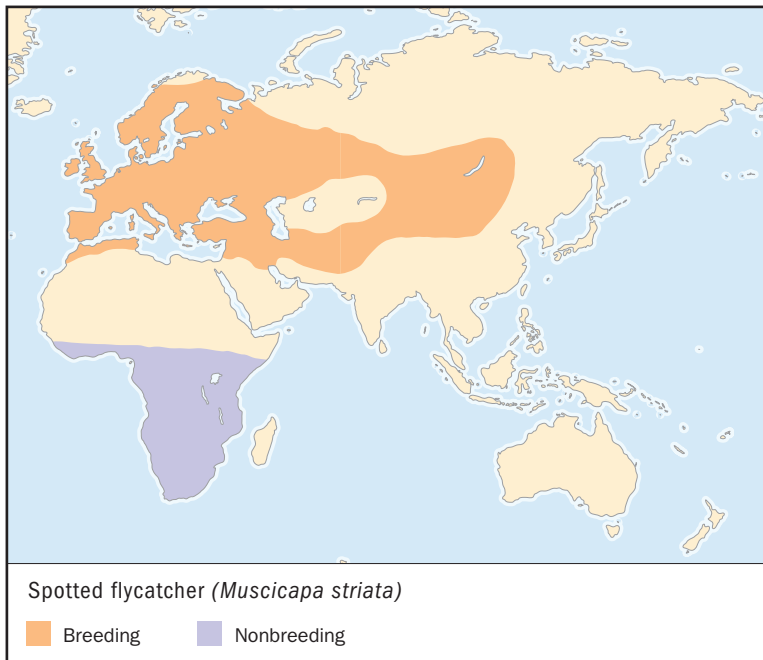


EGG RECOGNITION

Spotted flycatchers are very skilled at identifying their own eggs and will remove or ignore eggs placed in their nests by opportunistic birds, such as the common cuckoo or the cowbird. Opportunistic birds are birds that put their eggs in other birds' nests for them to raise. This egg recognition skill is the result of past exploitation by the cuckoo.

CONSERVATION STATUS

Eighteen species of true Old World flycatchers are at risk of extinction, or dying out. Nineteen other species are listed as Near Threatened, in danger of becoming threatened with extinction. Habitat destruction is the main reason that populations are declining. Some rare species have not been studied enough to determine their conservation status. At-risk species include, the Nimba flycatcher and the red-tailed newtonia, which are listed as Vulnerable, facing a high risk of extinction in the wild. Banded wattle-eyes are Endangered, facing a very high risk of extinction in the wild.



SPOTTED FLYCATCHER

Muscicapa striata

SPECIES ACCOUNTS

Physical characteristics: Both sexes of spotted flycatchers have brownish gray bodies and white undersides, with long tails and long wings. Some have gray streaks along their throats. The birds have black bills and short, black legs. Young birds have brown bodies and spotted undersides. This is where the species gets its name. They are 5 inches (12.7 centimeters) long.

Geographic range: Spotted flycatchers can be found in Europe, Russia, western Asia, and North Africa. They spend the winter in southwestern Asia and Africa.

Habitat: Spotted flycatchers prefer forests with deciduous trees, trees that lose their leaves in winter. These forested areas can be natural or cultivated as in orchards, parks, and gardens. Because they feed from high perches, they often hunt in cleared areas between trees.

Diet: Spotted flycatchers eat flying insects.



Spotted flycatchers swoop down from perches where they watch for prey, and capture flying insects while they are in the air. (Illustration by Barbara Duperron. Reproduced by permission.)

Behavior and reproduction: Spotted flycatchers swoop down from perches where they watch for flying insects, capturing them while in the air. They frequently return to the same perch to wait for more prey.

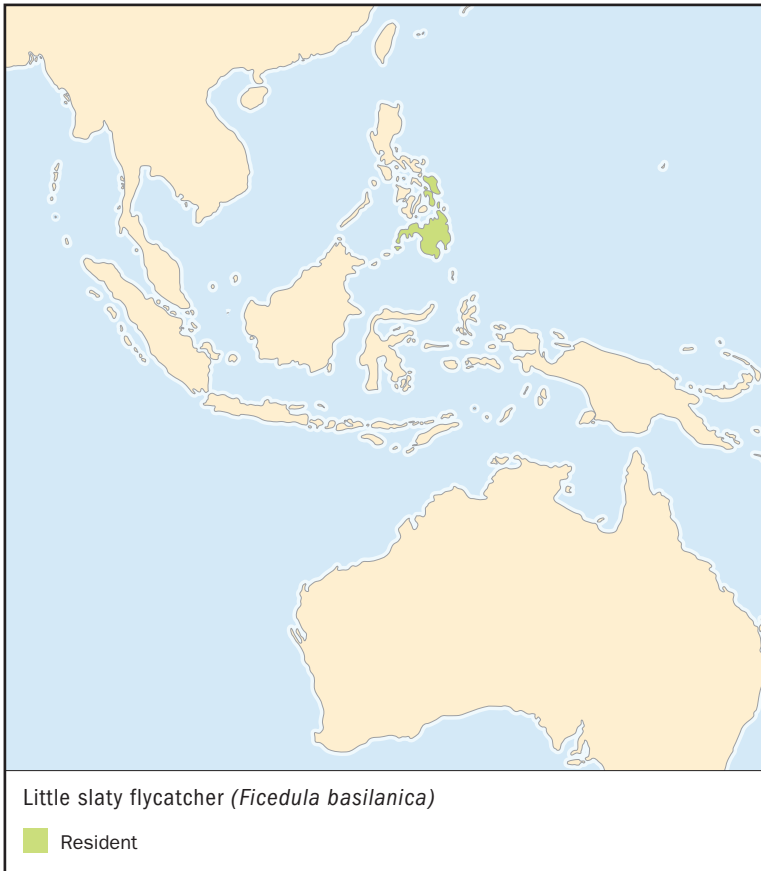
These birds build an open nest in a recess, hollowed out area, usually in a wall, a crotch of a tree, or a tree hollow. They will also nest in open-fronted nest boxes. Females lay four to six greenish eggs with rust colored spots.

Members of this family winter in Africa and southwestern Asia as single birds. They return to their territories as the season changes.

The song of the spotted flycatcher is a series of six squeaky notes.

Spotted flycatchers and people: This species has no special importance to humans, except to be appreciated by birdwatchers.

Conservation status: The population of spotted flycatchers is declining in parts of their territory but they are not threatened. ■



LITTLE SLATY FLYCATCHER

Ficedula basilanica

Physical characteristics: Little slaty flycatchers are small, only 5 inches (12.7 centimeters), with heavy bills and short tails. Males have slate gray heads, backs, and tails, with a white underside, a grey breast band and sides, brown wings, and pink feet. They also have white circles around their eyes that are exposed when they sing. Females have reddish brown heads and wings, with brighter color on their tails, and white undersides with a reddish wash on the breast and sides. They also have a buff ring around their eyes.

Geographic range: This species is native to the Philippines, occurring on the islands of Samar, Leyte, Dinagat, Basilan, and Mindanao.



Little slaty flycatchers are quite shy and are best found by listening to their song or call. (Illustration by Barbara Duperron. Reproduced by permission.)

Habitat: Little slaty flycatchers live in the dense understory, the smaller trees in a forest, from sea level to 3,900 feet (1,200 meters). Sometimes, these birds can be found as high as 394 feet (120 meters) up in the trees.

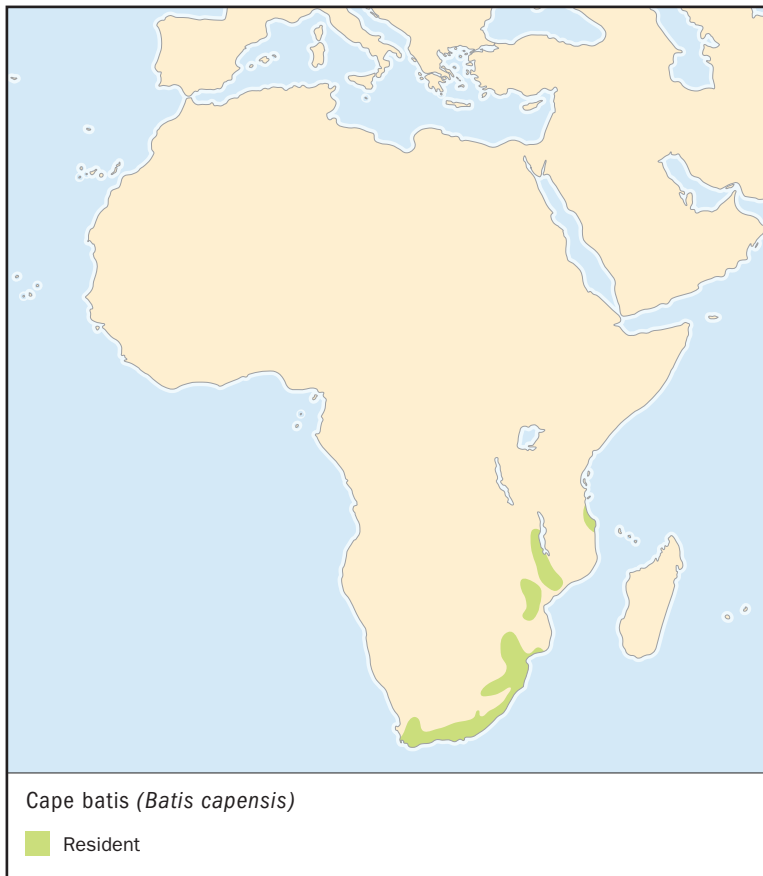
Diet: Little slaty flycatchers eat insects.

Behavior and reproduction: The species has a high-pitched, three-note call with a beautiful, warbling song. Little slaty flycatchers are quite shy and are best found by listening to their song or call.

Like other Old World flycatchers they build cup-shaped nests. Little slaty flycatchers live in permanent territories.

Little slaty flycatchers and people: There is some economic potential for ecotourism for communities where little slaty flycatchers live.

Conservation status: Populations have decreased due to lowland forest loss from logging and other land clearing for mining and recreational development, making this species Vulnerable. There are between 2,500 and 10,000 little slaty flycatchers in the world. ■



CAPE BATIS

Batis capensis

Physical characteristics: Cape batisses belong to a group called wattle-eyes. All thirty-one wattle-eyes live in Africa. They are called wattle-eyes because they have bright flesh colored circles around their eyes. This group of birds is being reconsidered as an Old World flycatcher and has been granted its own family grouping by some taxonomists, scientists who classify animals according to specific traits.

Also called cape puffbacks, cape batisses have large heads relative to their small bodies. They weigh 5.1 ounces (13 grams) and are 6 inches (15 centimeters) long. They have short tails, round wings, and orange eyes. Males have dark blue-gray backs and tails, black

heads, white throats and bellies edged in reddish brown, and a black breast band. Females have brown heads, a brownish wash over the breast, and no breast band.

Geographic range: Cape batises live along the coast of South Africa and deep into the escarpments, steep slopes or cliffs, of Swaziland and Zimbabwe.

Habitat: Cape batises make their home in forests, scrub, and planted gardens in southern Africa. Their range is from sea level to 7,050 feet (2,150 meters).

Diet: Like other flycatchers, cape batises eat insects.

Behavior and reproduction: This species lives in permanent territories with a mate, either alone or in small groups, though some populations will gather in large flocks of ten to thirty birds.

Sometimes, cape batises will forage for food with other bird species. Some populations migrate to different elevations as the seasons change.

Cape batises actively seek insects throughout the forest canopy by flushing, frightening, them from their places of cover, hiding. The birds then capture their prey as it flies.

This species mates from September to December, building a small cup-shaped nest of dry grasses, held together with spider webs. The nest is built low in thick brush in the fork of a branch and holds one to three eggs. The female incubates, sits on and warms, the eggs for seventeen to twenty-one days. Mating pairs stay together for life.

Cape batises have a monotonous, unchanging, call of repeating “tu” syllables and a simple whistle.

Cape batises and people: This species has the potential to contribute to ecotourism, an industry based on attracting tourists to view birds and other animals in their environments.

Conservation status: Cape batises are not threatened with extinction. ■

FOR MORE INFORMATION

Books:

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Robbins, Michael. *Birds: Fandex Family Field Guides*. New York: Workman Publishing Company, 1998.

Stattersfield, A. J., David R. Capper, and Guy C. L. Dutton. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions and BirdLife International, 2000.

Weidensaul, Scott. *Birds: National Audubon Society First Field Guides*. New York: Scholastic Trade, 1998.

AUSTRALIAN FAIRY-WRENS

Maluridae

Class: Aves

Order: Passeriformes

Family: Maluridae

Number of species: 30 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

These birds range in length from 5.5 to 8.6 inches (14 to 22 centimeters) and weigh from 0.27 to 1.2 ounces (7.6 to 34.1 grams). Grasswrens are colored brown and tan with black and white markings. Only faint shades mark the differences between the sexes in grasswrens. Female undersides tend to be more russet, reddish, in color than male. Breeding male fairy-wrens display colors of bright blues, violets, purples, and russets. Some have cheek patches of bright turquoise—these cheek patches can be blown out to form a face fan during territorial contests or courting displays. Emu-wrens have long tails that are filament-like, or thread-like.

GEOGRAPHIC RANGE

Fairy-wrens can be found throughout Australia and New Guinea. Some species are found only in a limited area, while others are distributed over the entire continent. Emu-wrens and grasswrens only inhabit Australia. Fairy-wrens are found in New Guinea as well as Australia.

HABITAT

The various species of Australian fairy-wrens can be found in different habitats. Grasswrens find homes in grasslands of the dry interior lands of the continent with a very limited geographic distribution. Emu-wrens inhabit many different kinds of environments such as swampland, and the thickets of the southern Australian plains along the coastal belts. Others

inhabit the arid, dry, interior. Fairy-wrens also live in many different kinds of habitats, from tropical grasslands to wet forests and woodlands, and the semi-arid interior. Yet other species have adapted to humans and inhabit parks and suburban gardens.

DIET

Australian fairy-wrens are omnivores, eating both plants and animals. They forage, search for food, on the ground for wide range of invertebrates, animals with backbones and also harvest foliage, twigs, and bark, and sometimes catch flying insects from the air. Some species are more specific in their foraging, as in the case of the purple-crowned fairy-wren that forages in pandanus plants along the edges of tropical streams, rivers, and ponds.

BEHAVIOR AND REPRODUCTION

Most members of the Australian fairy-wrens live in family groups. They are usually territorial and sedentary, do not migrate. They communicate with other group members with a wide variety of melodious calls. They keep busy foraging for food, climbing through the thick undergrowth, and hopping over open areas of ground with their tails cocked.

Most species of the family are cooperative breeders, meaning that they have help with the care of the young from the offspring of previous years. The adults studied have a high rate of survival, and breed extensively. Their nests are domed balls of woven grass with side entrances. Clutches have two to four red-spotted, white eggs. The female usually incubates the eggs for a period of ten to fourteen days. Young birds are fed for four to six weeks.

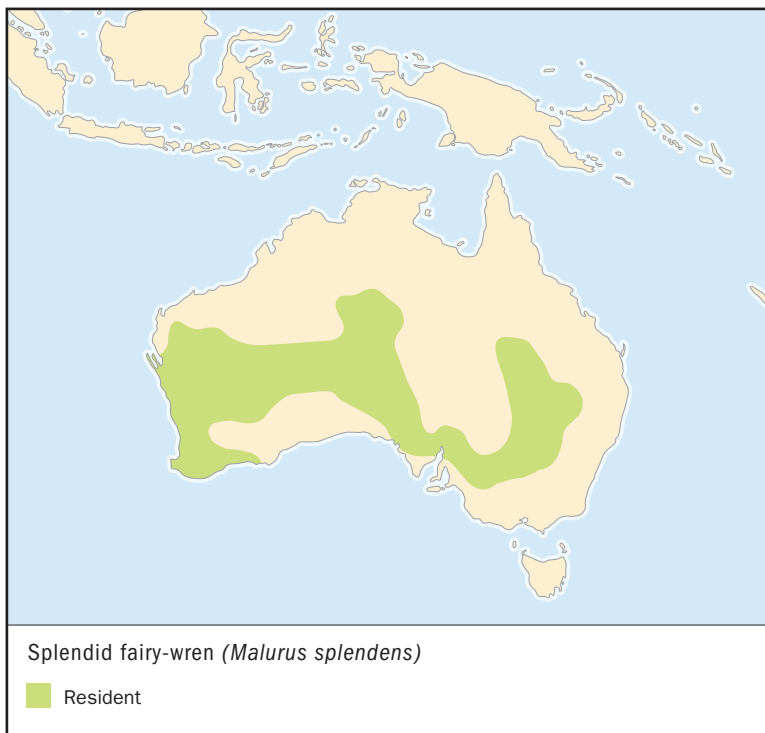
A team of scientists from Cambridge University and Bristol University, England, led by a professor from the Australian National University, reported in 2003 that superb Australian fairy-wrens have found a way to combat predatory habits of cuckoos—in this case, the Australian Horsfield's bronze-cuckoo. The cuckoo kills any host young by kicking them out of their nest, and then lays an egg that resembles the fairy-wren's egg, and so the superb Australian fairy-wren does not remove the egg. Within forty-eight hours of hatching, the cuckoo kicks out the host's chick from the nest. But the host fairy-wrens, at least approximately 40 percent of those studied, abandoned the nest two days later, and the cuckoo chick starves to death while the fairy-wrens nest again.

AUSTRALIAN FAIRY-WRENS AND PEOPLE

There is no specific connection to humans other than through observation that has named the family as among the most beautiful of birds. They continue to be studied as a “recently” discovered separate family, only identified in 1975. DNA research in the late 1990s finally discovered their distinct identity.

CONSERVATION STATUS

Australian fairy-wrens are not currently threatened, though overgrazing and the changes in the land that come from agriculture and timber production do provide a potential threat.



SPLENDID FAIRY-WREN

Malurus splendens

SPECIES ACCOUNTS

Physical characteristics: Splendid fairy-wrens are 5.5 inches (14 centimeters) in length. The male and female differ in weight, with the male weighing about 0.28 to 0.39 ounces (7.9 to 11.1 grams), and the female weighing about 0.27 to 0.36 ounces (7.6 to 10.2 grams). While in breeding plumage the male is a very bright, deep blue with turquoise cheek patches and crown, black breast, face, and back markings. Females, nonbreeding males, and juveniles are drab olive on top with blue tails and wings.

Geographic range: Splendid fairy-wren populations are scattered throughout Australia, including the western coastal areas, the interior, and some in the east.

Males and females both mate with a number of other birds during the breeding season.
(© Wayne Lawler/Photo Researchers, Inc. Reproduced by permission.)



Habitat: Splendid fairy-wrens mostly inhabit the drier acacia (uh-KAY-shah) woodlands and scrublands.

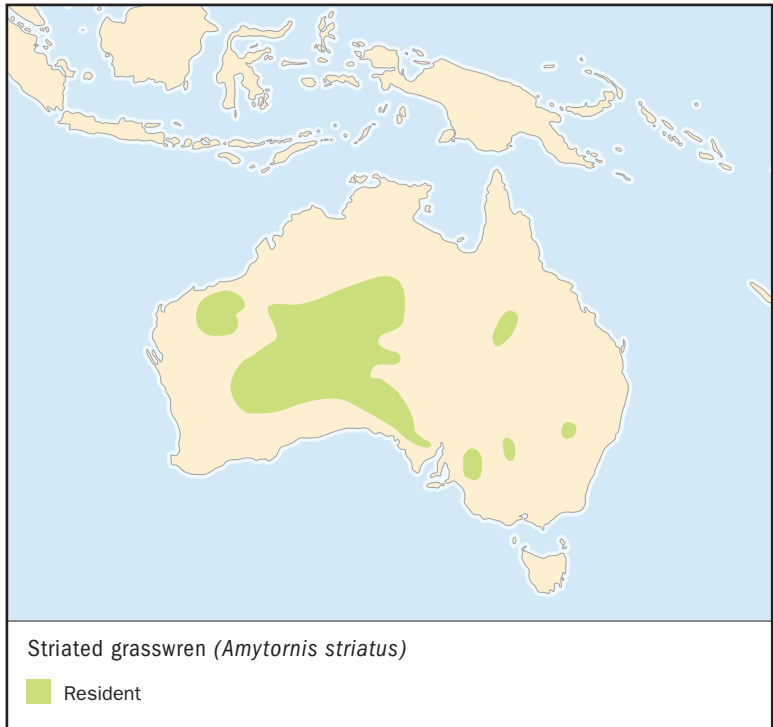
Diet: Splendid fairy-wrens are primarily carnivores, meat-eaters, foraging on the ground for insects such as ants, grasshoppers, spiders, and insect larvae (LAR-vee), but they also eat foliage up to canopy height. They forage for food doing a hop-search, pouncing on their prey, and may catch flying insects in the air.

Behavior and reproduction: Splendid fairy-wrens are stronger fliers than other fairy-wrens, and also forage in a variety of ways. The bird is a territorial breeder, and is usually found in small groups. Its voice is a loud series of trills.

Splendid fairy-wrens are promiscuous breeders, meaning both males and females mate with a number of other birds. The male is the father of less than half of the offspring in his territory. Clutches have two to four, red-spotted white eggs. Females incubate the eggs for about two weeks, and fledging takes place in ten to thirteen days.

Splendid fairy-wrens and people: No known significance to humans, other than extensive research and observation by scientists.

Conservation status: Splendid fairy-wrens are not threatened, but they may be threatened in the future by loss of habitat for agriculture and overgrazing. ■



STRIATED GRASSWREN

Amytornis striatus

Physical characteristics: Striated grasswrens average 5.7 to 6.9 inches (14.5 to 17.5 centimeters) in length. The male weighs between 0.56 and 0.78 ounces (16 and 22 grams). Both males and females are similar in appearance, with russet brown and paler shades of brown and tan on the upperparts and with buff-whitish undersides. They also have russet, reddish, splashes on the sides and a bill that has black whisker marks. The female has chestnut flakes.

Geographic range: Striated grasswrens have populations scattered across Australia, including areas from New South Wales to Western Australia, with a small central area of Queensland for one of its subspecies.

Habitat: Striated grasswrens can be found on sand plains and rocky hills, and throughout the shrubby vegetation of the dry interior land.

Diet: Striated grasswren forage for food on the ground, eating insects, particularly ants and beetles, and seeds. They also have been observed eating cactus flowers and foraging at midnight.

Behavior and reproduction: By nature, the striated grasswren is secretive in its behavior. The birds are poor fliers, hopping instead over open ground with their tails cocked, or with it horizontal when they are traveling through vegetation that is very thick. Striated grasswrens can be found alone, or in small family groups. Their song is melodious with trills and whistles.

Due to the difficulty of observing this bird, their breeding habits have been difficult to define. A clutch has two or three red-spotted, white eggs. Cooperative breeding or help with the nest has not been observed.

Striated grasswrens and people: There is no special significance between striated grasswrens and people. Since this bird is often distributed in areas that can be difficult to travel into, the bird can be difficult to observe.

Conservation status: By the early twenty-first century the striated grasswren had been listed by the New South Wales National Park as Near Threatened, in danger of becoming threatened. Their population and distribution has been severely reduced due destruction of favorable habitat by overgrazing, the introduction of herbivores, as well as predatory cats and foxes, and extensive fires. ■

FOR MORE INFORMATION

Books:

Campbell, Brude, and, Lack, Elizabeth, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Fisher, James, and Roger Tory Peterson. *The World of Birds*. Garden City, NJ: Doubleday & Company, Inc., 1964.

Lewis, Adrian, and Derek Pomeroy. *A Bird Atlas of Kenya*. Lisse, Netherlands: Swets and Zeitlinger, 1988.

Simpson, Ken, and Nicolas Day. *The Birds of Australia, A Book of Identification*. Dover, NH: Tanager Books, 1984.



The striated grasswren is secretive in its behavior, and is a difficult bird to study. (Illustration by Joseph E. Trumpey. Reproduced by permission.)

Web sites:

Ehrlich , Paul R., David Dobkin, and Darryl Wheye. "Birds, DNA, and Evolutionary Convergence." Stanford Alumni Organization. http://www.stanfordalumni.org/birdsite/text/essays/Birds,_DNA.html (accessed on June 9, 2004).

"Fairywrens & Grasswrens." Monterey Bay. <http://www.montereybay.com/creagrus/fairywrens.html> (accessed on June 9, 2004).

"Striated Grasswrens." Gluepot's Biological Treasures and Threatened Birds. <http://birdsaustralia.com.au/gluepot/threatened.html> (accessed on June 9, 2004).

"Striated Grasswrens." Michael Morcombe's Field Guide to Australian Birds. <http://www.michaelmorcombe.com.au/striatedgrasswre.html> (accessed on June 9, 2004).

family CHAPTER

AUSTRALIAN WARBLERS

Acanthizidae

Class: Aves

Order: Passeriformes

Family: Acanthizidae

Number of species: 63 to 68
species

PHYSICAL CHARACTERISTICS

Australian warblers tend to be small- to medium- sized birds, with an average length of 3.5 to 10 inches (9 to 27 centimeters) and a weight range of 0.25 to 2.5 ounces (7 to 70 grams). Most of the species are olive-green, somewhat drab-colored birds, but with distinctive markings on the head and face, such as light eyebrows, spots, and streaks. Some species have yellow or reddish rumps. Some of the thornbills and gerygones have yellow undersides, while the pilotbird and rockwarbler have reddish brown underside. This family of birds has slender bills. The tails of some species are cocked, tilted, regularly. Males and females are similar in appearance.

GEOGRAPHIC RANGE

Australian warblers are distributed throughout Australia, New Guinea, and New Zealand, including the Chatham Islands. They are also found in Indonesia and South East Asia.

HABITAT

Australian warblers occur in many different habitats throughout their distribution area including, mangroves, rainforests, eucalyptus (yoo-kah-LIP-tus) forests and woodlands, shrub lands, and desert.

DIET

Most of this family captures small invertebrates, animals without backbones, from the foliage, twigs, branches, and trunks,

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

picking their prey with their long and slender bills. They eat primarily small insects, but occasionally some species eat seeds and fruits.

BEHAVIOR AND REPRODUCTION

The Australian warbler family of birds is a very active group, hopping over the ground and through the foliage of the trees or bushes. Some species can be very mysterious in their behavior. Most species tend to be sedentary and tend to stay in the same area throughout the year with only local movement. However, one species, the white-throated gerygone does migrate into southeastern Australia in the spring. All other species are weak fliers. In song and vocalization, most species are melodious, loud, and have distinctive voices. Some are even gifted mimics, able to copy or imitate other species' calls. Others have only buzzing, trilling or rattling notes with short quiet songs. Certain species like the bristlebirds have whistling calls that are carried far in order to announce their presence.

Some species are cooperative breeders, where nonbreeding birds assist the parents with the care and protection of chicks, while in other species only parents raise their chicks. The breeding season lasts from late winter to early summer. Several breeding attempts occur each season. Nests are domed, usually placed in trees or shrubs, with some in crevices and hollows, or even on the ground. Clutches commonly include two eggs, but have been observed with as many as five. The color of the eggs comes in many forms including white, white with sparse spotting, cream or buff with widespread spotting, and chocolate. The eggs that are incubated only by the female are laid at forty-eight-hour intervals. Incubation and the independence of fledglings are both accomplished over a long period of time. Both parents, and sometimes the helpers, feed the young. Many nests succumb to predators. Bronze-cuckoos lay their eggs in some nests and kick out the young warblers. Adult survival each year is as high as 80 percent—a high percentage for birds that are so small.

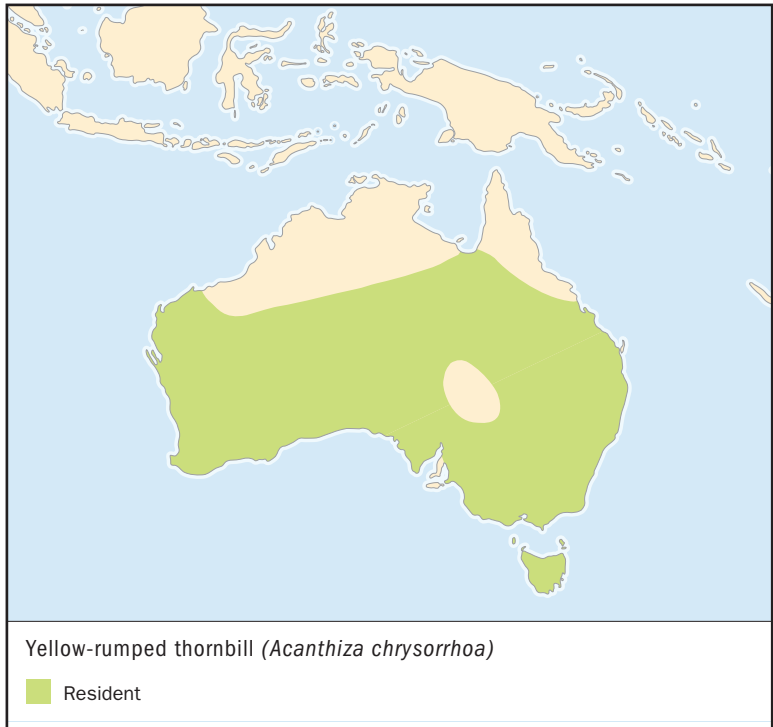
AUSTRALIAN WARBLERS AND PEOPLE

Humans do not often take notice of this small, drab bird, though the songs of some species are definitely well-known. With many exhibiting such cryptic behavior, bird watching can be difficult, which is one reason that it has taken so long to identify so many of the species.

CONSERVATION STATUS

One species of gerygone, the Lord Howe gerygone was already Extinct, no longer existing, by the beginning of the twenty-first century. The Biak gerygone is Endangered, facing a very high risk of extinction in the wild; and the Norfolk Island gerygone is Vulnerable, facing a high risk of extinction in the wild. These populations have been hurt by habitat loss as well as from the introduction of predatory mammals. In 2000, the Action Plan for Australian Birds listed a large number of this family as Threatened, in danger of extinction, or Almost Threatened, close to becoming threatened. Other threats to these populations have been extensive fires and grazing from the introduced mammals. Only the Coorong subspecies remained categorized as secure on the Australian list.

SPECIES ACCOUNTS



YELLOW-RUMPED THORNBILL *Acanthiza chrysorrhoa*

Physical characteristics: Yellow-rumped thornbills average 4 inches (10 centimeters) in length, with a weight of 0.32 ounces (9 grams). They are known for their bright yellow rump—from which they derived their common name—and their black crown with white spots, and white brow.

Geographic range: Yellow-rumped thornbills can be found throughout central and southern Australia, including Tasmania, an island off the southern coast of Australia.

Habitat: Yellow-rumped thornbills inhabit open woodland areas and edges, farmland, grassland that has trees or bushes sparsely located throughout the area, parks, and gardens.

Diet: Yellow-rumped thornbills are omnivores, eating both animals and plants. They eat primarily insects and other invertebrates, and



Yellow-rumped thornbills live in family groups or small flocks with others thornbills. They tend to be active, noisy, and sing with twittering melodies and calls. (Illustration by Amanda Humphrey. Reproduced by permission.)

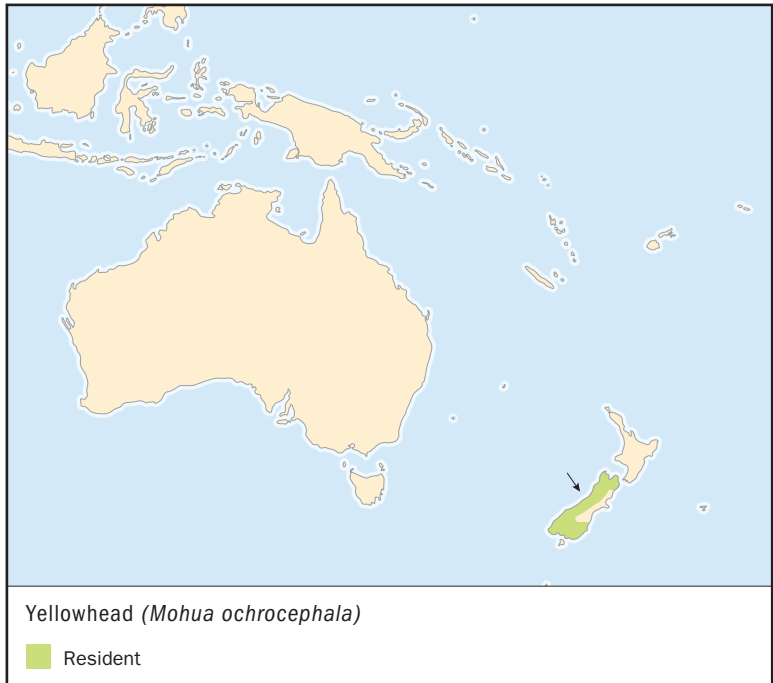
occasionally, seeds. The birds forage the ground for the most part, but will sometimes forage on shrubs and low trees.

Behavior and reproduction: Yellow-rumped thornbills live in family groups or small flocks with others thornbills. They tend to be active, noisy, and sing with twittering melodies and calls. Their yellow rumps are easy to spot while in flight but they virtually disappear when the birds land. Generally they only move locally, and tend to be non-migratory, sedentary.

The breeding season is from July to December, and sometimes goes later. The nest is domed, built in a bush or sapling, and is made of grass, lichen, and other plant fibers. The side entrance is concealed by a hood. A false cup-shaped nest is put on the top, probably to confuse predators or cuckoos. Both males and females build the nest. Each clutch has two to four lightly speckled, pink eggs. Only the female incubates the eggs, which is a period of eighteen to twenty days. The fledging period lasts seventeen to nineteen days. The parents often have the assistance of helpers. Many nests do not survive predators or the parasites of the bronze-cuckoos.

Yellow-rumped thornbills and people: People are well-acquainted with this colorful bird, and it is particularly familiar to those who live in the country.

Conservation status: This species is not threatened with extinction. ■



YELLOWHEAD

Mohua ochrocephala

Physical characteristics: Yellowheads measure 6 inches (15 centimeters) in length, and weigh 0.7 ounces (20 grams). Their upper-sides are olive with a bright yellow head and yellow breast.

Geographic range: Yellowheads can be found on South Island of New Zealand, including Marlborough, Nelson, Westland, western Otago, Southland, and near Dunedin.

Habitat: Yellowheads inhabit forest areas, especially those that are dominated by beech trees.

Diet: Yellowheads forage throughout the day in the shaded canopy, the upper layer of the forest, or upper subcanopy, layer just below the canopy. They are primarily insectivores, insect eaters, picking insects from the foliage, branches, and trunks, and sometimes even dead wood. Yellowheads prefer larvae, the newly hatched, wingless forms

of insects. They sometimes eat fruit, flowers, and fungi.

Behavior and reproduction: During the non-breeding season, yellowheads form large flocks, and are joined by other bird species. During the breeding season, yellowheads live in pairs or trios and are distributed over a large home range. Their mechanical-like call is varied, with six to eight notes repeated rapidly.

The yellowhead engages in cooperative breeding, and is possibly polygamous (puh-LIH-guh-mus), having more than one mate. They breed from October to February. They build cup-shaped nests in holes. Clutch sizes are typically three to four eggs that are pinkish with reddish brown blotches. They are incubated only by the female for a period of eighteen to twenty-one days. The young fledge at twenty-one days. Two or three adults continue to feed them after fledging for up to fifty-five more days.

Yellowheads and people: There is no known significance between people and yellowheads.

Conservation status: Yellowheads have been declared Vulnerable. Their population has declined significantly due to loss of forest, and their habit of avoiding edges, stunted, and regrowth forests. They are not as vulnerable to nest predators as many New Zealand birds because they nest in holes, but the young birds that are newly fledged often face risk from predators. ■

FOR MORE INFORMATION

Books:

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermilion, SD: Buteo Books, 1985.

Higgins, P. J., and J. M. Peter, eds. *Handbook of Australian, New Zealand & Antarctic Birds*. Vol. 6, *Pardalotes to Shrike-Thrushes*. Melbourne: Oxford, 2002.

Hvass, Hans. *Birds of the World, in Color*. New York: E. P. Dutton & Company, Inc., 1964.

Simpson, Ken, and Nicolas Day. *The Birds of Australia, A Book of Identification*. Dover, NH: Tanager Books, 1984.



During the breeding season, yellowheads live in pairs or trios and are distributed over a large home range. (Illustration by Amanda Humphrey. Reproduced by permission.)

Web sites:

“Australo-Papuan Warblers, Acanthizidae.” Bird Families of the World.
http://www.montereybay.com/creagrus/auz_warblers.html (accessed
on June 17, 2004).

family CHAPTER

AUSTRALIAN CHATS

Epthianuridae

Class: Aves

Order: Passeriformes

Family: Epthianuridae

Number of species: 5 species

PHYSICAL CHARACTERISTICS

Australian chats are small birds that range in length from 4.3 to 5.5 inches (11 to 14 centimeters), and weigh between 0.3 and 0.6 ounces (9 and 18 grams). These birds have long and delicate legs. Some species have bills that are decurved, curve downward. The bills of all species are fine, or smooth. Like their relatives, the honeyeaters, their tongues are brush-tipped, which allows some species to eat nectar.

Male Australian chats are very brightly colored, especially during breeding season, with yellow, orange, or red undersides. Females, juvenile, immature birds, and some species of non-breeding male chats have plumage, feathers, which is colored but not very bright. The male white-fronted chat is black, white, and gray.

GEOGRAPHIC RANGE

Australian chats can be found all over Australia, except in the tree-covered north and east coasts, or in southwestern Tasmania, an island off the southeastern coast of Australia. The different species of chats tend to live in different areas of their range. The orange chat and the crimson chat tend to live throughout the center of the continent from the west coast to the western slopes of the Great Dividing Range, and from the south coast to the tropics. They prefer the more arid land, dry, and are seldom found in the wetter areas. White-fronted chats can be found across southern Australia. They are also the only species that inhabit Tasmania. Gibberbirds live in the stony deserts of central Australia.

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

HABITAT

Australian chats are usually linked to various kinds of shrublands. They also live in the nearby semi-arid woodland areas full of acacias (uh-KAY-shahz). Gibberbirds live in areas that have come to be known as “Gibber plains” and are stony deserts, with a light grass and saltbush cover. Yellow chats prefer the low vegetation that grows close to swamps, floodplains, and bore drains.

DIET

Australian chats are primarily insectivores, eating insects and spiders that they grab on the ground or from low shrubs. White-fronted chats sometimes eat snails, other invertebrates (animals without backbones), and seeds—grabbing their prey from either dry or wet ground, or from shallow water. They sometimes run after aerial prey, but almost never capture flying insects. Gibberbirds eat a lot of seeds on a regular basis. Crimson chats will consume nectar, just like their honeyeater relatives.

BEHAVIOR AND REPRODUCTION

Australian chats tend to gather in small flocks. During breeding season they pair off and some species defend breeding territories. Observations have suggested that white-fronted chat males are more likely to defend their mate than a territory. The birds show off while on perches, or in flight, dipping their tails and raising the colorful feathers on their heads or back ends. Orange and crimson chats tend to be nomadic, with a north-south seasonal migration, travel, and also in response to local rainfall. When it is dry, the birds move toward the coasts.

The calls of the Australian chats are simple and metallic. Their songs are pretty with a twittering or piping sound. When they sense danger, they issue a harsh churring call.

White-fronted and crimson chats have been observed more than the other species when breeding. White-fronted chats have long breeding seasons, peaking in late winter and spring, August to November, and breeding again after the rainy season in later summer and fall, March to April. They are known to make up to five attempts at raising young during each season. Their cup-shaped nests are made from grass, rushes, twigs, and plant fiber, and sometimes mammal hair or fur and feathers. Nests are placed 1 to 4 feet (0.3 to 1.2 meters) from the ground in small bushes and sometimes on the ground. Clutches have two to four eggs,

with at most five eggs, that are fleshy or pinkish white with small reddish spots at the larger end. Both male and female incubate, sit on, the eggs, hatching after thirteen to fourteen days. Both parents protect and feed the young. Each parent averages seven visits per hour. White-fronted chats fledge, grow the feathers necessary for flight, after about fourteen days; a couple of days earlier for the orange and crimson. About 30 percent of nests succeed. Most fail due to predators such as cats, foxes, snakes, and ravens. The infamous Horsefield's bronze cuckoo parasitize a small portion of the nests. Cuckoos lay their eggs in other birds' nests, a host nest, and when cuckoo chicks hatch host parents care for the cuckoo chick, sometimes neglecting their own smaller chicks.

AUSTRALIAN CHATS AND PEOPLE

Desert travelers and bird watchers enjoy the colorful orange and crimson chats.

CONSERVATION STATUS

Two subspecies of yellow chats are Endangered, facing a very high risk of extinction, dying out, in the wild, and one species is Critically Endangered, facing an extremely high risk of extinction in the wild. They are at risk due to the loss and degradation of their habitats.

SPECIES ACCOUNT



CRIMSON CHAT *Epthianura tricolor*

Physical characteristics: Crimson chats average about 4.7 inches (12 centimeters) in length, and 0.4 ounces (11 grams) in weight. Males have dark brown backs, with a white throat and white center belly, and white undertail coverts, small feathers that cover the base of longer tail and wing feathers. Their eyes are a creamy white, and they display a vivid crimson, red, crown and undersides. Females have light brown upperparts and head, with a white throat and belly, and pale red and buff patches on the breast, flanks, and rump. Juveniles look like females except that they do not have any red on their breast.

Geographic range: Crimson chats can be found throughout the inland, western, and southern coasts of Australia, and occasionally in southeastern and eastern Australia.



Habitat: Crimson chats tend to prefer to live in arid and semi-arid shrubland. They sometimes can be found in grassland or farmland.

Diet: Crimson chats are omnivores, eat animals and plants, primarily eating insects and other invertebrates, animals without backbones, off the ground and from low shrubs, and sometimes from the air. They also eat seeds and probe flowers for nectar.

Behavior and reproduction: Crimson chats tend to be nomadic in nonbreeding season. They call with a metallic, harsh deep tone, whistling and twittering call. Because they usually come out and breed after rains, their breeding range can differ greatly from one year to the next.

Crimson chats form seasonal breeding pairs. Their cup-like nests can be found in low shrubs no higher than 3 feet (0.9 meters). They have clutches with two to five eggs. Both male and female incubate the eggs for ten to fourteen days, with fledges at ten days. Both parents also protect and feed the young, and show distraction displays that draw predators away from the young.

Male and female crimson chats both incubate their eggs and care for the young after they hatch. (© Peter Slater/Photo Researchers, Inc. Reproduced by permission.)

Crimson chats and people: Desert visitors enjoy observing the colorful bird.

Conservation status: Crimson chats are common in Australia, and are not threatened. Their numbers in various locations may differ. ■

FOR MORE INFORMATION

Books:

Blakers, M., S. J. J. F. Davies, and P. N. Reilly. *The Atlas of Australian Birds*. Carlton, Australia: Melbourne University Press, 1984.

Campbell, Bruce, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Simpson, Ken, and Nicolas Day. *The Birds of Australia*. Dover, NH: Tanager Books, 1984.

Web sites:

"Australian Chat, Epthianuridae." Bird Families of the World. http://montereybay.com/creagrus/Australian_chats.html (accessed on June 18, 2004).

"Australian Chats." World Bird Guide. <http://www.mangoverde.com/birdsound> (accessed on June 18, 2004).

"Bird Checklist of the World—Australia (continental including Tasmania)." Avibase—The World Bird Database. <http://www.bsc-eoc.org/avibase/avibase.jsp?region=auct&pg=checklist&list=clements> (accessed on June 18, 2004).

family CHAPTER

LOGRUNNERS AND CHOWCHILLAS

Orthonychidae

Class: Aves

Order: Passeriformes

Family: Orthonychidae

Number of species: 3 species

PHYSICAL CHARACTERISTICS

The three species of this family of Passeriformes, or perching birds, are very similar in appearance. The largest, the chowchilla, is about 12 inches (30 centimeters) long. The two species of logrunners are only 7.3 to 8.4 inches (18.5 to 21 centimeters) long. They are stocky birds, with powerful legs and claws. Their specialized tails bear sharp spines on the stiff shafts of all ten tail feathers. This trait led this family of birds to also be called spine-tailed logrunners.

Male logrunners and chowchillas have white breasts, and females have reddish orange breasts. Chowchillas have unmarked black and white feathers. Logrunners, however, have patterns of brown, black, gray, white, and dull red.

GEOGRAPHIC RANGE

Logrunners and chowchillas are found only in Australia and New Guinea. The southern logrunner is restricted to the eastern coastal forests of Australia. The chowchilla is found in northeastern Australia in the Atherton Tableland region above 1,475 feet (450 meters). The New Guinea logrunner occupies territory in the central highlands of New Guinea from 6,500 to 9,300 feet (1,980 to 2,840 meters). Some subspecies of the New Guinea logrunner live in regions as far up as 11,300 feet (3,450 meters) and in lower areas near 3,900 feet (1,200 meters).

HABITAT

Logrunners and chowchillas live on the litter-strewn floor of dense rainforests and wet sclerophyll (SKLARE-uh-fill) forests.

phylum

class

subclass

order

monotypic order

suborder

▲ family

Sclerophyll forests have plants with hard leaves that have adapted, changed, to low levels of phosphorous, a chemical that encourages plant growth. Logrunners and chowchillas will move into nearby vegetation if it is dense enough. These adjacent territories may include non-native plants have been introduced into the wild.

DIET

Logrunners and chowchillas eat adult insects, larvae (LAR-vee), the newly hatched form of insects, and worms. Sometimes they also forage for berries.

BEHAVIOR AND REPRODUCTION

Logrunners and chowchillas never leave their permanent ranges of 1.7 to 9.8 acres (0.7 to 4 hectares), though they will defend a much larger territory. They live with a mate or in small groups of two to five birds.

Logrunners and chowchillas have different mating patterns. Logrunners begin nesting in the winter months as early as April and last until November. The chowchilla nests anytime, but July through December is most common. Females of all three species build dome-shaped nests made of twigs, which are topped with dry leaves and moss, and include a roof overhang that keeps the interior nest dry during rainstorms. Chowchilla nests are larger to accommodate their bigger size.

Female southern logrunners lay two white eggs. Chowchillas and the New Guinea logrunner lay only one, although only 75 percent of the eggs hatch. Eggs hatch after twenty-one to twenty-five days and chicks remain in the nest for sixteen to eighteen days for the northern logrunner and twenty-two to twenty-seven days for the chowchilla. Females incubate, or sit on the eggs until they hatch. Males bring food to the female, but only she feeds the young. More than one chowchilla male will bring food to the female for the hatchlings. After the fledglings, birds that have grown the feathers needed for flight, leave the nest, they are still fed by both parents.

Chowchillas and logrunners have loud calls that can be heard at dawn before the birds begin foraging, searching for food, and at dusk when they are settling down for the night. If they encounter other birds, they will call out as if to remind others of their territory boundaries.

These birds are shy and will shriek if startled, but have been known to ignore humans when they feed, walking right over a person's foot as they forage.

LOGRUNNERS, CHOWCHILLAS, AND PEOPLE

Because these birds are relatively shy and their habitats are restricted, they are unknown to most people except one native group. The Dyirbal Aboriginal people named the chowchilla after its call, which is: "chow chowchilla chowly chook chook."

CONSERVATION STATUS

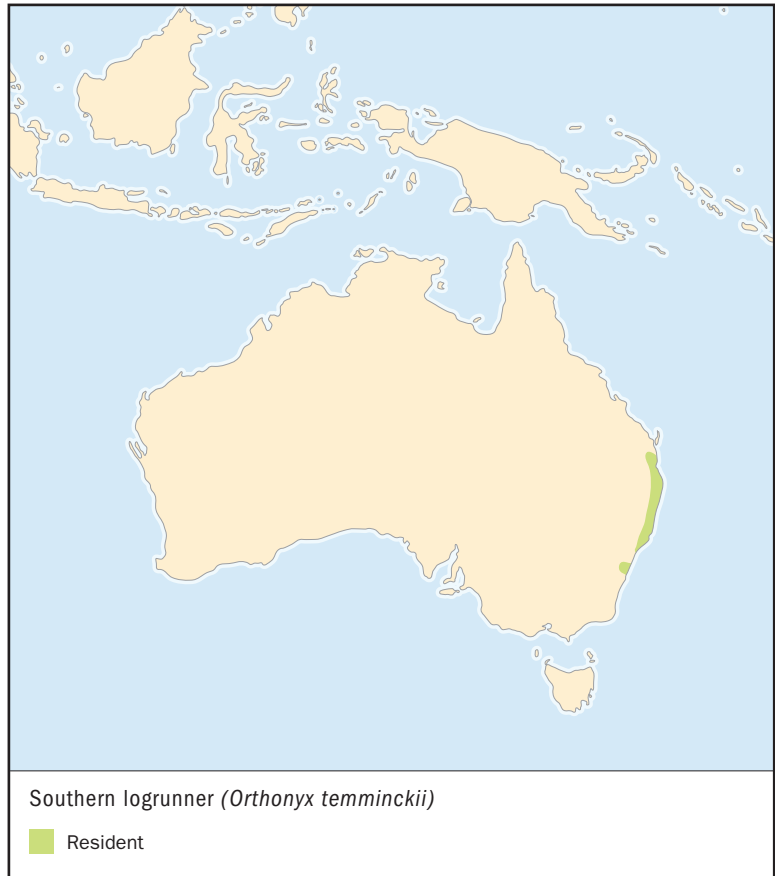
Southern logrunners, although not threatened with extinction, dying out, are decreasing in population due to the clearing of rainforest for pasture and farmland. They are adapting by moving into places where exotic plants have been introduced and have spread into zones between cleared land and the remains of rainforests. Chowchillas, on the other hand, have not been affected by the loss of sections of their habitat through deforestation, the cutting down of trees. New Guinea logrunners are considered rare but this is most likely due to their shy nature and the remoteness of their territory.



SCLEROPHYLL FORESTS

Sclerophyll (SKLARE-uh-fill) forests, where logrunners live, are unique to Australia. These forests evolved, changed, in response to low levels of phosphorous, a chemical that encourages plant growth. Sclerophyll plants have hard leaves that contain lignin, a substance that prevents them from wilting. Dry sclerophyll forests have eucalyptus trees that are 32.8 to 98.4 feet (10 to 30 meters) tall with smaller sclerophyllic plants underneath. Eucalyptus (yoo-kah-LIP-tus) in wet forests are taller, over 98.4 feet (30 meters), and contain plants with softer leaves such as tree ferns.

SPECIES ACCOUNT



SOUTHERN LOGRUNNER *Orthonyx temminckii*

Physical characteristics: Southern logrunners, also known as spine-tailed logrunners, are 7.3 to 8.3 inches (18.5 to 21 centimeters) long. Males weigh 2.08 to 2.4 ounces (58 to 70 grams), and females weigh 1.6 to 2.08 ounces (46 to 58 grams). This species has tan and grey feathers with a black stripe on its wings. The female has an orange throat, while the throat of the male is white.

Geographic range: These birds live in a narrow strip forest on the eastern coast of Australia from New South Wales in the north to Queensland in the south.

Habitat: Southern logrunners thrive in the heavy vegetation on the rainforest or wet sclerophyll forest floor. They will range into nearby underbrush if it is sufficiently dense.

Diet: Southern logrunners eat insects, worms, and other invertebrates, animals without backbones, that they find in the soil.

Behavior and reproduction: Southern logrunners use their tails to help them find food. Spreading their tails, they anchor the sharp tips into the ground. This allows them to rake their feet through the litter on the forest floor, and scratch the ground to uncover larvae and insects. They can pivot on their tails, clearing an 8-inch (20-centimeter) circle. Yellow-throated scrubwrens and eastern whipbirds often follow behind logrunners and chowchillas and pick up insects and grubs the other birds ignored.

Southern logrunners stay within their territory throughout the year. They mate for life and will form small family groupings within their territory. The bird usually breeds from May to August, but have been observed mating as early as April and as late as October, producing one or two broods, groups of offspring hatched at the same time.

Only the female builds the nest, which is a dome-shaped structure, made of sticks and grasses, built against a tree trunk or bush low to the ground. The entrance is placed on the side and a flap of moss covers the entryway, protecting the interior from rain.

Only two white eggs are laid by the female. The female incubates the eggs for twenty-one to twenty-five days. When hatched, the young birds remain in the nest for sixteen to eighteen days, fed by their parents.

Although shy, they will ignore humans. But when startled or in danger, their piercing “keek” call can be heard for some distance. Their normal song is an equally loud series of “weet” sounds.

Southern logrunners and people: There is no known significance between southern logrunners and people.

Conservation status: Southern logrunners are not threatened with extinction. Their population in the northern part of their range is large enough for the species to be considered common. Their numbers in the south are decreasing, and they are quite rare in the



When southern logrunners are startled or in danger, their piercing “keek” call can be heard for some distance. (Illustration by Michelle Meneghini. Reproduced by permission.)

southernmost part of their range, due to the cutting down of the southern rainforests. Southern logrunners survive in pockets of rainforest in the south by moving into areas where exotic plants like blackberry bushes and lantana have been planted and quickly moved into cleared land. ■

FOR MORE INFORMATION

Books:

Higgins, P. J., and J. M. Peter, eds. *Handbook of Australian New Zealand and Antarctic Birds: Pardalotes to Shrike-thrushes*. Melbourne: Oxford University Press, 2003.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Robbins, Michael. *Birds: Fandex Family Field Guides*. New York: Workman Publishing Company, 1998.

Schodde, R. *Directory of Australian Birds: Passerines*. Collingwood, Australia: CSIRO Publishing, 1999.

Simpson, K., and N. Day. *A Field Guide to the Birds of Australia*. Ringwood, Australia: Penguin Books Australia Ltd., 1996.

Weidensaul, Scott. *Birds: National Audubon Society First Field Guides*. New York: Scholastic Trade, 1998.

family CHAPTER

QUAIL THRUSHES AND WHIPBIRDS

Eupetidae

Class: Aves

Order: Passeriformes

Family: Eupetidae

Number of species: 16 to 19 species

PHYSICAL CHARACTERISTICS

Quail thrushes range in length from 6.7 to 12.2 inches (17 to 31 centimeters), and weigh 1 to 7 ounces (30 to 205 grams). The majority of the species have strong legs with long ankle bones. The bill tends to be short, and their tails are mostly long and wide. Their feathers are thick and fluffy. Quail thrushes are striking with patterns of black, white, brown, and orange—a color normally found only on the undersides. The top parts of the birds look like the ground cover.

Three or four of the jewel-babblers are similar in appearance to quail thrushes, only with large patches of blue in the plumage, feathers. Rail-babblers—often considered a part of this inclusive group although their true ancestry continues to remain questionable—have long necks and tails, and plumage that is chestnut-colored, with a blue streak running along the side of their neck. The species of Australian whipbirds and wedgebills are slim, dull in their color, and have long tails. Their crest is short but is pointed. The Papuan whipbird looks somewhat like a smaller version of those birds, but only superficially. This bird has no crest. Melampittas have long legs, noticeably short tails, and black plumage. The small bird, ifrit, has a medium-short tail and rusty brown plumage and a bright blue cap.

GEOGRAPHIC RANGE

All of the species except the rail-babbler are found exclusively in Australia and New Guinea. The rail-babbler lives in the lowland peninsular areas of Thailand, Malaysia, Sumatra, and Borneo.

phylum

class

subclass

order

monotypic order

suborder

▲ family

HABITAT

Australian quail thrushes, with the exception of the spotted quail thrush, prefer arid habitats, particularly dry woodland areas, stony plains, sandhills and shrub steppe, a plain with few trees. The rail-babbler and the species of New Guinea live in the rainforest and in many different types of closed forest-type areas. The greater melampitta can be found only in the forest of karst, environments that are characterized by heavy limestone deposits with deep ground fissures, cracks, and sinkholes, and often sitting over underground streams and caves. The eastern whipbird is also found in the rainforest, eucalyptus forests that are wet, and other areas with a low density of vegetation. The western whipbird is found in areas with dense vegetation that is thick and dry. Wedgebills are at home in dry woodlands, steppes, a semi-arid grass covered plain, and heathlands.

DIET

Australian quail thrushes tend to be ground feeders, slowly moving around and eating prey by picking it with their bills. These birds shuffle through the leaves and other ground litter with their legs. They are, for the large part, insectivores, eating insects and other invertebrates, animals without backbones, and sometimes small vertebrates, animals with backbones. They are also known to eat seeds. The only one of the family that differs from this routine is the ifrit. Ifrits gather food in the forest at varying elevations, stalking through trunks and branches and probing in the bark and moss for their prey.

BEHAVIOR AND REPRODUCTION

Quail thrushes tend to be shy and secretive, except for the ifrit. Those that live in the rainforest hide themselves in the thick vegetation. Quail thrushes will either freeze or break into flight when they are disturbed. When they land, they will either stop and freeze, or run away quickly on foot. Whipbirds and melampittas will often approach any non-obtrusive observer, cautious but curious. As a whole, the birds are usually heard but not seen. They indicate their presence with vocalizations that can range from thin whistles to loud and booming notes. Both male and female eastern whipbirds take part in antiphonal, answering, duets in a way that gave birth to their name. The male whistles loudly, sounding like a whip has passed through the air with the female following right away with two loud cracks.

Quail thrushes make their nests of dry vegetation and put them in small depressions on the ground. The ifrit will build a much bulkier nest with thick walls about 10 feet (3 meters) off the ground. Most of the nests are cup-shaped; but the melampitta will build a domed nest with a side entrance and put it up the side of tree fern trunk. Quail thrushes, jewel-babblers, and the rail-babbler have clutches of two eggs, and the other species, have only one egg. The eggs have dark spots and blotches all over them, with a pale background underneath the markings. Australian whipbirds and wedgebills have eggs that are light blue with black scribbles very boldly marking them. Due to the problems of observing these secretive birds, the male and female roles in incubation and brooding, as well as the time of the nesting periods remain unknown.

AUSTRALIAN CHATS AND PEOPLE

Due to their secretive behavior and habits, quail thrushes and whipbirds are unknown to the average person, with the exception of the eastern whipbird. The eastern whipbird's call is known throughout the Australian bush, with its distinctive sound—though more people have heard this species than have seen it. Ifrits carry a variety of poisons in their tissues, especially in the feathers. The poison's true purpose has not yet been determined, but it does seem to be connected to the bird's diet. Another species of New Guinea birds known to have similar toxins is the pitohius of the Pachycephalidae (whistler) family.

CONSERVATION STATUS

Rail-babblers and western whipbirds are Near Threatened, in danger of becoming threatened with extinction, because of habitat loss. The western whipbird population in southwest Australia has been threatened by fires that have decreased the distribution and the numbers of this species. In the 1960s the population was down to seventeen pairs or less, and has recovered through conservation. With restricted burning, captive breeding, and the transfer of individual birds, the population climbed to over 500 individuals. A subspecies of the spotted quail-thrush inhabiting the Mount Lofty Ranges of South Australia has almost disappeared from that area due to habitat loss.

SPECIES ACCOUNT



SPOTTED QUAIL-THRUSH *Cinclosoma punctatum*

Physical characteristics: Spotted quail-thrushes range in length from 10.2 to 11 inches (26 to 28 centimeters), and weigh between 2.4 and 3.1 ounces (67 and 87 grams). Their plumage is a mottled blend of white, buff, rust or reddish brown, brown, and black. They have light brown heads with a white brow stripe. Their throats are black with a white patch, and their breasts are a pinkish tone.

Geographic range: The spotted quail-thrush can be found in south-east Australia, Tasmania, and in the Mount Lofty Ranges, in south-central Australia.



Spotted quail-thrushes prefer living on the ground, and are sedentary, secretive, and shy. (Illustration by John Megahan. Reproduced by permission.)

Habitat: Spotted quail-thrushes live in eucalyptus forest with a littered, open floor, and prefer areas on rocky hillsides.

Diet: Spotted quail-thrushes tend to be insectivores, eating insects and other invertebrates, but they also eat small vertebrates and seeds at times. They pick their prey from the ground which they hunt in a slow, meandering fashion.

Behavior and reproduction: Spotted quail-thrushes prefer living on the ground, and are sedentary, stay in one place, secretive, and shy. If they are frightened they will take flight in a way similar to a quail. When they land, the spotted quail-thrushes will run off quickly, or freeze in position.

Their vocalizations are a repeated, double-note song, as well as a high thin contact call, inaudible to the average person.

Spotted quail-thrushes have a breeding season from late July-August to December. The female builds the cup-like nest of dry vegetation and puts the nest into a depression in the ground near the base of a tree, shrub, rock, or clump of grass. The female also incubates, sits on and warms, the clutch of two spotted eggs, but the male helps to feed the chicks during and after the nineteen day fledging period, when chicks grow the feathers needed for flight. In any breeding season, one to three broods may be raised.

Spotted quail-thrushes and people: There is no known significance between spotted quail-thrushes and people.

Conservation status: Spotted quail-thrushes are locally common, but are sparsely populated. Those in the Mt. Lofty Ranges, South Australia, are Critically Endangered, facing an extremely high risk of extinction in the wild, and may already be extinct. They are threatened by loss of habitat due to clearance and fragmentation. ■

FOR MORE INFORMATION

Books:

Blakers, M., S. J. J. F. Davies, and P. N. Reilly. *The Atlas of Australian Birds*. Carlton, Australia: Melbourne University Press, 1984.

Campbell, Bruce, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Coates, Brian J. "Passerines." In *The Birds of Papua New Guinea*. Vol. 2. Alderley, Australia: Dove Publications, 1993.

Simpson, Ken, and Nicolas Day. *The Birds of Australia*. Dover, NH: Tanager Books, 1984.

Web sites:

"Crowdy Bay National Park Fauna." Crowdy Bay National Park. <http://www.harringtoncrowdy.com/HarringtonCrowdyBayNPFaunaList.html> (accessed on June 19, 2004).

Dettmann, Belinda. "Number 24." Flightline. <http://www.deh.gov.au/biodiversity/science/abbbs/pubs/jan-2000.pdf> (accessed on June 19, 2004).

family CHAPTER

FANTAILS Rhipiduridae

Class: Aves

Order: Passeriformes

Family: Rhipiduridae

Number of species: 42 species

PHYSICAL CHARACTERISTICS

Fantails, also known as “wagtail flycatchers,” vary in length from 5.5 to 8.5 inches (14 to 21.5 centimeters), with weights between 0.2 to 0.9 ounces (6 to 25 grams). These small birds get their name from their long, rounded, fan-shaped tail, often encompassing as much as 50 percent of the bird’s total length. Their characteristic flat, triangular bill is common to most flying insectivores, insect eaters. Wide bristles surround the bill in an unusual arrangement of double rows. Most fantails have small feet, except for those more terrestrial, land-dwelling, species. Wings are somewhat rounded, causing the fantails to fly slower but making it easier to maneuver.

Fantails do not usually have bright plumage, feathers, with brown, rust, white, gray, black, or a combination of these, dominating the color scheme. Two species that inhabit the northwestern and western boundaries of the family’s distribution area are the exception. The black-cinnamon fantail with its bold, contrasting colors also proves to be an exception. Most males and females are alike in their plumage, though the black fantail of New Guinea has black males and rust-colored females. Another New Guinea species, the dimorphic fantail also shows two colors: one phase is dark, with the black and rust tail; the other shows a light gray tail. Little difference exists between adults and juveniles except that the juveniles’ colors are more faded with rusty edges to some of their feathers, especially the wing coverts, feathers that cover the primary flight feathers. Overall, there is a wide variety of color spread throughout the species that are found over a number of islands.

phylum
class
subclass
order
monotypic order
suborder

▲ family

GEOGRAPHIC RANGE

Fantails are generally found in the Australasian countries, Australia and surrounding islands, but can also be seen well outside of these areas. They generally inhabit regions of eastern Pakistan, India, Sri Lanka, the Himalayas, southern China, Southeast Asia, the Philippines, Indonesia, New Guinea, Australia, New Zealand, and the islands of the southwestern Pacific, east of Samoa and north to Micronesia. Several species are known to coexist in the same areas of New Guinea, with up to seven found in the very same locale. Some species such as the white-throated fantail inhabiting areas from eastern Pakistan through south and southeast Asia to Borneo, as well as others, are found to be widely distributed. Some species are restricted to only one small island, such as the case of the Ponapé fantail and the Matthias fantail are endemic to Ponapé, Micronesia, and to Mussau, in the Bismarck Archipelago, respectively.

HABITAT

Most species of fantails are found in the rainforest most of the time. Yet there is a wide range of habitats where various species also prefer to inhabit. The mangrove fantail is restricted to mangroves. The rufous fantail of Australia lives mostly in the rainforest and wet sclerophyll (SKLARE-uh-fill) forest, Australian forests populated by plants with hard, short, spiky leaves, during breeding and nonbreeding seasons; but during migration, they are known to land in more open areas, even city centers. The willie wagtail enjoys the greatest diversity of habitats, preferring open areas, but found in deserts and city parks, as well. The only areas they do not live are the dense rainforests. Varying species might live in the same area, but prefer different elevations in the forest areas where they live. For instance, the sooty-thicket fantail lives in the low, dense thickets. Willie wagtails spend most of their time on the ground hunting for food.

DIET

Fantails are primarily insectivores, eating insects and other small invertebrates. Only the larger species, such as the willie wagtail are strong enough to capture and handle larger prey. In the case of larger prey such as moths, they must be hammered on a branch in order to subdue them and make them ready to be eaten. Willie wagtails might capture small lizards

and eat them also. Most prey are caught while the bird is airborne. The gray fantail is known to be stunning to watch while flying in pursuit of its prey. They whirl in rapid loops, characterized by sudden changes in direction that sometimes appear to endanger the bird. When the bird moves through the leaves, its tail is cocked. Some observers think this helps the bird to flush out insects. Some fantails also have been known to deliberately divide their environments among species inhabiting the same locality, as they utilize different foraging, hunting for food, methods at differing elevations. Willie wagtails remain within 10 feet (3 meters) of the ground.

BEHAVIOR AND REPRODUCTION

Fantails are known for holding their tail cocked, tilted to one side, alternately fanning and closing it, and swinging it from side to side while a bird is perched or moving around in the foliage, plant leaves. They also use this tail posture when in flight, performing highly aerobatic, looping flights in order to catch their insect prey. Viewed sometimes as “hysterical,” the fantails tend to be restless, and rarely perch for long. Some species are more sedate, calmer.

Several fantail species are tame and easily approach humans while engaged in capturing insects, flushed out by a moving observer. They use other harmless larger animals in a similar way, willie wagtails often use domestic cattle both as a perch and to flush out insects. When an animal is perceived as predator, however, fantails can become extremely aggressive, even toward larger birds, attacking them and landing on their backs. Willie wagtails signal their aggression by giving a rasping, scolding call and expanding their white eyebrow. Territorial disputes that result in defeat will render the losing bird's white eyebrow invisible after it shrinks. Some fantails such as the thicket-fantails are shy and hard to see in the dense undergrowth they inhabit.

Tropical populations of fantails are sedentary, they do not migrate and live in the same area all year long. In some southern temperate, not too hot or cold, regions, and at the higher elevations, the fantails often travel considerable distances with the seasons. The rufous fantail of Australia moves north and south along the east coast on a regular basis. The southeastern populations of grey fantails travel long distances north and northwest during the winter. Such species as the white-throated

and yellow-bellied fantails, spend the summer in the Himalayas and move to lower altitudes at the end of the summer.

Fantails are not noted for their songs, but have relatively pleasant voices. The calls are simple, and the voices tend to sound very delicate. When they do sing, the song tends to be rapid and full of enthusiasm. The gray fantail's song has been compared to the notes of a violin. The willie wagtail, again an exception, has a scolding call and strong song, with the ability to be heard at some distance.

The fantail breeding habits are virtually unknown in the rarer species, but widely studied in the more common. Most have similar breeding habits with both sexes building a nest that is a small, neat cup of fine grass stems bound by a thick external coating of cobwebs. They place their nest in a horizontal fork, or some other human-made structure or other suitable site, at a height of 3 to 50 feet (1 to 15 meters) off the ground, though usually within 10 feet (3 meters) of the ground. Fantails have been observed attaching a "tail" underneath the nest made of the nesting material. A clutch includes two to four eggs that are pale or cream colored and marked with brown or gray blotches and spots that form a wreath at the larger end of the egg or around its middle. Yellow-bellied fantails have cream or pinkish cream eggs with a cap on the larger end and pinkish brown flecks or small spots on the cap. Both parents incubate, sit on, the eggs over a time period of twelve to fourteen days. After they hatch the chicks stay in the nest for thirteen to fifteen more days, with both parents taking care of them.

Nests are not concealed and so are easy prey for larger birds. In an experiment, researchers constructed artificial nests with eggs made from modeling clay. The team observed that more than ten bird species and several small mammals attempted to steal the eggs. This was evident due to the bite marks found on the eggs. The eggs' major predator was the pied currawong, which conducted more than half of the raids. Nest parasitism from the cuckoo is also common. Cuckoo parents lay their eggs in the nest of other bird species, such as the fantail. When the cuckoo chicks hatch, they push the other eggs from the nest and are raised by the host parents. The rufous fantail can be host to the begging young pallid cuckoo, which weighs more than eight times the size of the fantail.

FANTAILS AND PEOPLE

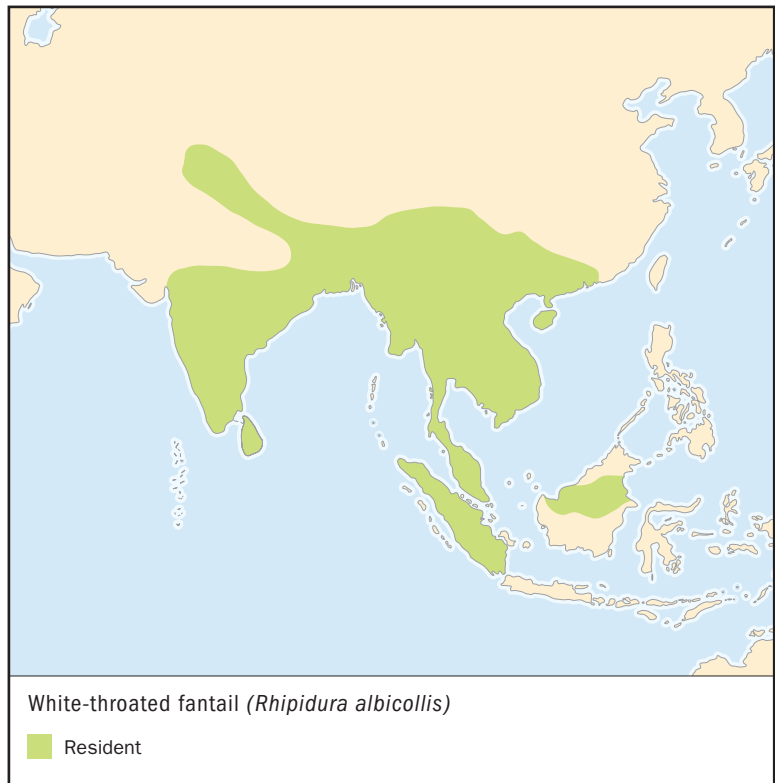
Some fantails are common and active in certain areas making them well-known to people. Because of their tame and friendly way with humans, they are a favorite of birdwatchers and the public in general. In certain areas of New Guinea, the willie wagtail is believed to be the ghost of a paternal relative. Superstition surrounds the legend that a singing bird hanging out near a garden that has just been planted is good luck, and the crops will grow well. In other places, it is known as a gossip, so people discussing important matters do not do so when the bird is nearby.

CONSERVATION STATUS

The many species of fantail that live on large land masses are not threatened with extinction. However, several of the island populations are Vulnerable, facing a high risk of extinction in the wild. These include the Malaita fantail on Malaita in the Solomon Islands of the Pacific, whose population is known to be small. What is causing this low population remains uncertain. The Manus fantail from the Admiralty Islands of Papua New Guinea was once common on Manus Island, though no records of them exist since 1934. They are still found on neighboring islands, but no reason has been determined for the decline in population.

The five species that are considered Near Threatened, in danger of becoming threatened with extinction, include the cinnamon-tailed fantail and long-tailed fantail, both of the Tanimbar Islands; Cockerell's fantail of the Solomon Islands; dusky fantail of San Christobal, Solomon Islands; and Matthias fantail of the Mussau, Bismarck Archipelago. The possible cause is the high number of logging operations throughout these species' range. The threat to the rarer, harder-to-observe species in remote locations remains difficult to determine. Small populations may be threatened by introduced species or the alteration of their habitat.

SPECIES ACCOUNTS



WHITE-THROATED FANTAIL *Rhipidura albicollis*

Physical characteristics: White-throated fantails have lengths that range from 6.9 to 8.1 inches (17.5 to 20.5 centimeters), with weights between 0.3 to 0.45 ounces (9 to 13 grams). They are primarily gray with a white throat, brow, and on the tip of their tail.

Geographic range: White-throated fantails can be found throughout northeastern Pakistan, India, southeastern Tibet, southern China, Myanmar, Thailand, Peninsular Malaysia, Sumatra, Borneo, in the foothills and adjacent plains up to 10,000 feet (3,000 meters).

Habitat: White-throated fantails generally prefer broad-leaved evergreen forests and are also comfortable living in areas that have been modified by humans, such as bamboo, in parks, secondary regrowth, and in wooded gardens.



White-throated fantails are primarily insectivores, feeding along branches and also outside of foliage. They hunt for food either by themselves, in pairs, or in mixed hunting parties. (Illustration by Jacqueline Mahannah. Reproduced by permission.)

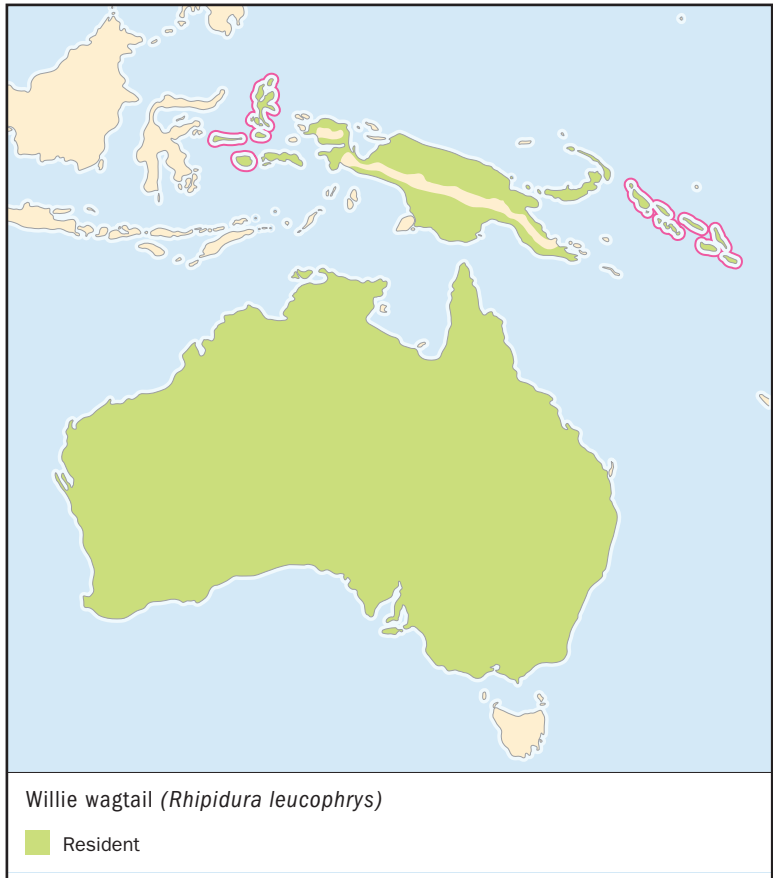
Diet: White-throated fantails are primarily insectivores, feeding along branches and also outside of foliage. They hunt for food either by themselves, in pairs, or in mixed hunting parties.

Behavior and reproduction: White-tailed fantails are typical of other birds of the family. They continually fan their tail as a part of their restless, showy behavior. They live in the undergrowth and middle growth of the forest. In the winter they move from higher elevations to the foothills and plains below their habitat the rest of the year. Their song is made up of thin, high-pitched notes.

The breeding season varies throughout the population distribution, averaging from February through May, to March through August. During the season up to two broods might be raised. Both males and females build the nest, and incubate the eggs that are spotted and in clutches of three eggs. The nest is cup-shaped, and made of fine grass stems held together by cobwebs around its exterior, with a dangling “tail” of grasses hanging underneath. The incubation period is from twelve to thirteen days, with fledging, growing of flight feathers, occurring at thirteen to fifteen days.

White-throated fantails and people: There is no special relationship between white-throated fantails and people.

Conservation status: White-throated fantails are not threatened. ■



WILLIE WAGTAIL

Rhipidura leucophrys

Physical characteristics: Willie wagtails are larger than the average fantail, with a length of 7.1 to 8.7 inches (18 to 22 centimeters), and an average weight of 0.6 to 0.8 ounces (17 to 24 grams). They have black plumage and a white brow and breast.

Geographic range: Depending on the particular population of willie wagtail, they can be found throughout Moluccas, New Guinea and the surrounding islands. One population can be found on the Bismarck Archipelago, Solomon Islands, and northern Australia. The other population can be found in southwest, southern, central, and southeast Australia.

Habitat: Willie wagtails prefer open areas and can live in a variety of diverse environments such as the desert, open grasslands, and in city parks, but they are not found in dense rainforest or eucalyptus forest.

Diet: Willie wagtails are carnivores, meat eaters, eating primarily insects and small lizards. They get their food by hawking, diving and grasping their prey, from perches. They grab insects out of the air or grab them from the ground after a short run.

Behavior and reproduction: This bird is primarily terrestrial, and runs, walks, or hops along the ground foraging for its prey. While in motion, their tails are usually lifted but not fanned out. When they pause, their tails swing back and forth, and up and down. Willie wagtails always have a mate nearby, but are usually alone when observed. They are noisy, active birds, often confronting or attacking larger animals that are known predators, or that enter their territory during breeding. They show aggression by puffing out their white eyebrows. In Australia the birds are considered primarily sedentary. However, in New Guinea they are known to leave certain areas during the dry season and return during the rainy season in order to breed. When willie wagtails are upset, they can be heard as giving a harsh scolding sound.

Willie wagtails breed mostly from July through February in Australia, but can nest in any month depending on suitable conditions. They can have up to four or more broods in any season. Both parents build the nest, incubate, and care for the young. Their nests are made of grass and fine bark, then covered with a spider web. However, the nests do not have the characteristic “tail” dangling underneath. The nest is placed on a horizontal fork or in a human-made structure or other suitable site, no higher than 16.5 feet (5 meters) above the ground. The eggs are cream colored with brown and gray speckles that form a wreath at the larger end. The incubation period lasts fourteen to fifteen days, with fledging after fourteen days.

Willie wagtails and people: Willie wagtails are popular in Australia. In parts of New Guinea legend says that they are the ghost of a paternal relative and thought to bring good luck. They are also considered to be a gossip so people avoid telling secrets when the birds are around.



Both willie wagtail parents build the nest, incubate, and care for the young. (© Peter Slater/Photo Researchers, Inc. Reproduced by permission.)

Conservation status: Willie wagtails are common and are not a threatened species. ■

FOR MORE INFORMATION

Books:

Campbell, Brude, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Coates, Brian J. "The Birds of Papua New Guinea." In *Passerines*. Vol. 2. Alderley, Australia: Dove Publications, 1993.

Hvass, Hans. *Birds of the World, in Color*. New York: E. P. Dutton & Company, Inc., 1964.

Web sites:

"Fantails and Allies." Personal Museum of Natural History. <http://www.planktonik.com/museum/en/birds> (accessed on June 17, 2004).

"Fantails of the World." World Bird Gallery. http://www.camacdonald.com/birding/Sampler6_Crows%28Fantails%29.htm (accessed on June 17, 2004).

"Fantails: Rhipiduridae." Bird Families of the World. <http://www.montereybay.com/creagrus/fantails.html> (accessed on June 17, 2004).

family CHAPTER

MONARCH FLYCATCHERS

Monarchidae

Class: Aves

Order: Passeriformes

Family: Monarchidae

Number of species: 96 species



PHYSICAL CHARACTERISTICS

Monarch flycatchers are small to medium birds that are 5 to 21 inches (13 to 53 centimeters) long. Their tails can be relatively short compared to their body length but some species have tails that measure 6 inches (15 centimeters). Monarch flycatchers have wide, bluish gray bills with bristles characteristic of insect eaters. They have short legs, long wings, and sharp, curved claws.

Coloring is often quite striking, with most species having no difference between males and females. In those that do show gender variations in color, many have very dramatic differences.

GEOGRAPHIC RANGE

Monarch flycatchers can be found in southern Africa, India and Southeast Asia, Indonesia, and the southern tip of Saudi Arabia. Indonesia is the home of thirty species that nest in the archipelagoes, or groups of tiny islands.

HABITAT

Monarch flycatchers prefer forest habitats, living in clearings and along the edges of the forest growth. They also can be found nesting in fruit plantations, formal gardens, and parks.

DIET

These birds are insect eaters. Most members of this family catch flying insects on the wing, while in the air. Others, however, will find insects among the leaves of trees and shrubs.

phylum

class

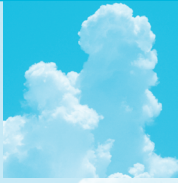
subclass

order

monotypic order

suborder

▲ **family**



THE GUAM FLYCATCHER AND SNAKES

Guam flycatchers, also known as Guam boatbills, were exterminated, killed off, by the introduction of brown tree snakes. Guam has no native snakes, so these snakes quickly multiplied and began to feed on native birds, including Guam flycatchers. The native birds did not have time to develop a defensive strategy as they would have done if they had been exposed to other predatory snakes in their territories over a long period of time.

BEHAVIOR AND REPRODUCTION

Monarch flycatchers usually mate for life and forage, search for food, alone with their mates. Some prefer the company of small groups of their kind and may even have other birds help a mated pair raise their young. Though most species prefer solitude, the males are noisy and make elaborate displays when they wish to attract mates.

Females lay two to four eggs in small, cup-shaped nests, made of plant fibers, lichens (LIE-kenz), moss, and even spider webs. These nests are anchored in the forks of tree branches. Both parents usually incubate the eggs, or sit on them until they are hatched. After fourteen days, the plain brown chicks hatch. Their striking coloring appears after they molt, shed their feathers.

MONARCH FLYCATCHERS AND PEOPLE

Monarch flycatchers are potential attractions for ecotourism, an industry based on attracting tourists to view birds, animals, and environments.

CONSERVATION STATUS

Five species of monarch flycatcher are Critically Endangered, facing an extremely high risk of extinction in the wild, and six are Vulnerable, facing a high risk of extinction in the wild. Fourteen are Near Threatened, in danger of becoming threatened with extinction, and two are Extinct, no longer exist.



AFRICAN PARADISE-FLYCATCHER

Terpsiphone viridis

Physical characteristics: African paradise-flycatchers are the largest paradise-flycatchers in Africa. They have a tail that is twice as long as their body. The head and crest are bluish black, and they have a bright blue ring around the eye. The back and the outside of their tails are reddish brown, with a gray belly. There is either a black or a white stripe on each wing, depending on the subspecies. The tail has two long white feathers that can be as long as 3.5 inches (9 centimeters) in the male. Females have similar coloring but are duller than and not as glossy as males. Subspecies that live in savanna

SPECIES ACCOUNTS

woodlands, characterized by thorny scrub, mopane trees, and grass, are usually all black or all white.

Geographic range: The African paradise-flycatcher is found only in sub-Saharan Africa.

Habitat: Very adaptable, African paradise-flycatchers can be found in almost every habitat in their region, except where it is very dry. They avoid dense forest but will nest along the forest edge, in clearings, and in savanna woodlands. Sometimes the birds are found in orchards, parks, and gardens as high up as 8,200 feet (2,500 meters). Some populations will move from one habitat to another during the dry season.

Diet: These birds eat insects, especially flying ants, termites, butterflies, moths, beetles, and caterpillars.

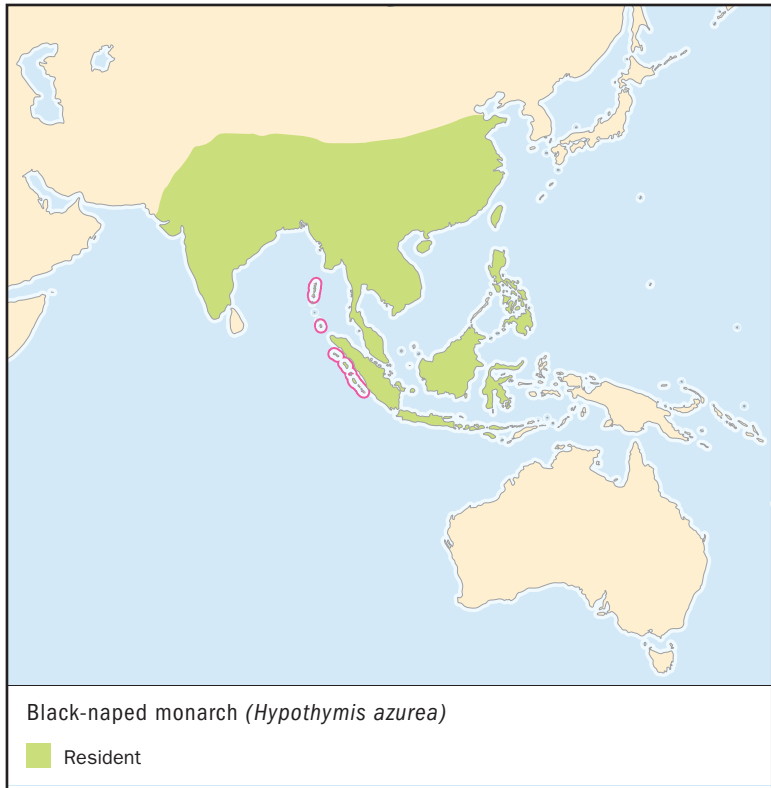
Behavior and reproduction: African paradise-flycatchers grab flying insects on the wing, and will perch and dive to capture food. Some subspecies search for insects among the leaves of trees, flitting, moving about rapidly, from branch to branch.

Rather solitary, they are found alone or in pairs. Males defend their territory at sunrise and sunset with loud songs and calls. Males also use their long tail and crest as courtship displays to attract a female. Sometimes, males will shiver their wings and do a dance on a branch. The female lays two to three white eggs in a cup-shaped nest that is anchored to the fork of a branch with spider webs. Both the male and the female incubate the eggs for fifteen days. The young birds are fed by the parents for eleven to fifteen days, but stay nearby for another week.

African paradise-flycatchers and people: Because of their striking beauty, African paradise-flycatchers are potential attractions for ecotourism.

Conservation status: African paradise-flycatchers are quite common throughout Africa and their numbers are healthy. However African paradise-flycatchers in East Africa are rapidly disappearing

due to the population explosion of crows, which were imported into the country in 1891. Crow numbers have become so large that in Dar es Salaam, the capital of Tanzania, alone there are nearly 500,000 crows. These birds attack native birds, livestock, and domestic pets. Crows attack African paradise-flycatchers outright and eat them. Working in pairs, one crow often distracts the bird away from its nest while another crow steals the eggs. African flycatchers are no longer found in the city. Though African paradise-flycatcher numbers elsewhere are numerous, they will become even more threatened as the crows move inland. ■



BLACK-NAPED MONARCH

Hypothymis azurea

Physical characteristics: Also called Pacific monarchs, black-naped monarchs are only 6 inches (16 centimeters) long. Their legs and feet are so weak they sit in a squatting pose when they perch. Both the male and the female have bright blue coloring on their heads, necks, backs, and chests, with grayish white bellies. Females, though blue, have grayish brown tones on their backs and more blue on their tails and wings. Males also have a round black spot on the back of their head, or nape. The Chinese name for this bird means, “black pillow,” and refers to this black spot. In addition, males have a black stripe that encircles their throat. Because of their small size and their bright blue coloring, these birds have been nicknamed the “blue fairies of the forest.”



Most black-naped monarchs prefer the lower to middle levels of the forest canopy and nest close to the ground, but the population in Taiwan prefers the upper and middle levels of the forest canopy and are not usually seen on the ground. (Illustration by Emily Damstra. Reproduced by permission.)

Geographic range: This species can be found in India, Southeast Asia, southern China, Taiwan, the Philippines, and Indonesia.

Habitat: Black-naped monarchs are common in mixed forests of pine and hardwoods below 4,265 feet (1,300 meters), as well as in stands of bamboo in river valleys. Though many black-naped monarchs prefer the lower to middle levels of the forest canopy and will nest close to the ground, the population in Taiwan prefers the upper and middle levels of the forest canopy and are not usually seen on the ground. They will migrate to cooler, higher elevations when the temperatures get too warm.

Diet: Black-naped monarchs eat insects, including butterflies, moths, and crickets.

Behavior and reproduction: The call of the black-naped monarch is a series of short whistles or trills. Sometimes, they give out loud chirps when they vocalize.

Territorial birds, they remain close to their ranges in pairs or alone. They will gather in small flocks or with other species when it is not mating season. These birds begin searching for mates at the end of the spring and on through the middle of summer. Females lay two to three cream or buff eggs that have reddish brown spots in their deep woven nests. Built into the forks of tree branches, these nests are made of plant materials, bark, moss, and spider webs.

Black-naped monarchs and people: These birds have no special significance to people.

Conservation status: Black-naped monarchs are very common and are not threatened with extinction. ■

FOR MORE INFORMATION

Books:

Barlow, Clive, and Tim Wacher. *A Field Guide to the Birds of the Gambia and Senegal*. New Haven, CT and London: Yale University Press, 1998.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Robbins, Michael. *Birds: Fandex Family Field Guides*. New York: Workman Publishing Company, 1998.

Urban, E. K., H. D. Fry, and S. Keith. *The Birds of Africa*, vol. 5. London: Academic Press, 1997.

Weidensaul, Scott. *Birds: National Audubon Society First Field Guides*. New York: Scholastic Trade, 1998.

family CHAPTER

AUSTRALIAN ROBINS

Petroicidae

Class: Aves

Order: Passeriformes

Family: Petroicidae

Number of species: 35 species

PHYSICAL CHARACTERISTICS

Australian robins are small, plump birds with large heads and short tails. They have long legs and strong feet, which allow the birds to have an upright stance. They have small bills with bristles on them, which helps them catch insects. Most of them have short tails, but the scrub robins have longer ones to help them balance as they feed on the ground. The scrub robin is also the only species that nests and forages, searches for food, on the ground.

The coloring of Australian robins differs among species. Some are all black or black with distinctive white stripes on their lower backs. Others are gray with yellow or red undersides. Still others have grayish brown backs and whitish undersides.

GEOGRAPHIC RANGE

Australian robins can be found in India, Southeast Asia, Micronesia, Indonesia, New Zealand, and Australia.

HABITAT

Most Australian robins live in forests and woodlands, but scrub robins live in semi-arid scrub, dry areas with short trees and shrubs. Some species live in mangroves and eucalyptus (yoo-kah-LIP-tus) forests. Some Australian robins can be found nesting in trees and bushes along cultivated fields.

DIET

Australian robins eat insects, spiders, earthworms, and sometimes even leeches, crabs, and mollusks.

phylum

class

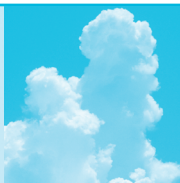
subclass

order

monotypic order

suborder

▲ family



FAMILY HISTORY

Australian robins are not related to the robins of the New World, the Western Hemisphere, which are actually thrushes. Though they resemble some Old World flycatchers due to similar adaptations to the environment, they are not related to this family either, nor do they behave like them. They do not normally find their food while they are flying. An ancient family, Australian robins are more closely related to Australian lyrebirds and honeyeaters.

BEHAVIOR AND REPRODUCTION

Australian robins live with a mate or in small family groups. They usually stay within their territories and do not migrate. They may move to a different altitude, which is usually not far away. Their territories can be as small as 1 acre (0.5 hectare) or as large as 10 acres (4 hectares).

The songs of this family are composed of whistling or piping notes. These birds give harsh alarm calls when they feel threatened.

Most Australian robins feed by diving from a perch to grab food they spot on the ground. Scrub robins forage on the ground.

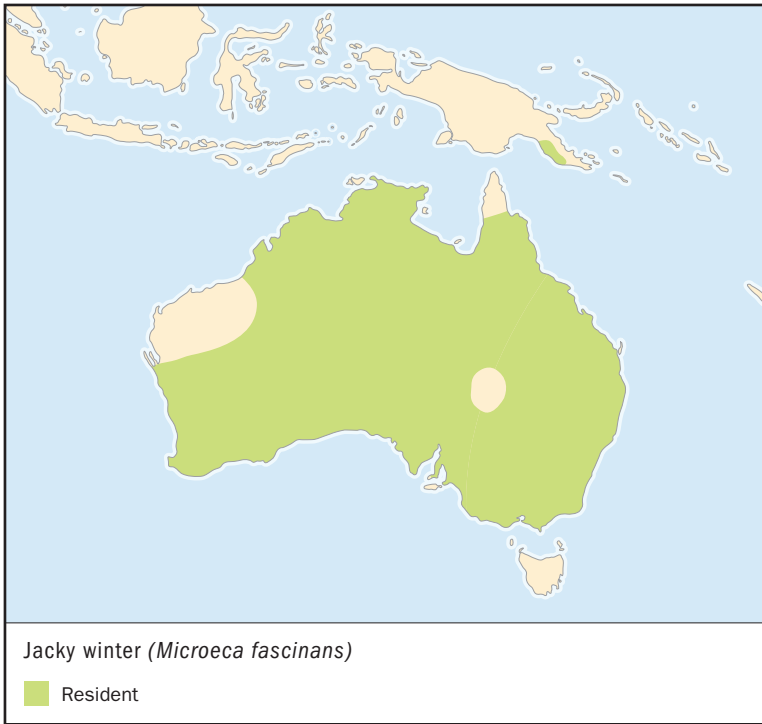
Generally, this species mates for life. Some species allow helpers to raise the young with them. The female builds a cup-shaped nest in the fork of a tree branch. Bark or lichen (LIE-ken) is often placed over the top of the nest in order to hide it from predators, animals that hunt them for food. The female lays one to three eggs and incubates them, or sits on them until they hatch, for fifteen to nineteen days, depending on the species. The male of some species will feed the female while she incubates the eggs. The young are fed by the parents for nine to fourteen days; this also varies among species.

AUSTRALIAN ROBINS AND PEOPLE

Their bright colors and pleasant songs make them popular among bird watchers.

CONSERVATION STATUS

One species is Endangered, facing a very high risk of extinction, or dying out, in the wild. Two subspecies are Vulnerable, facing a high risk of extinction in the wild, and one subspecies is Near Threatened, in danger of becoming threatened with extinction. Many species have experienced declining population due to habitat loss because of extreme clearing of land for agricultural use. Australian robins are also vulnerable to larger birds that prey on them.



JACKY WINTER *Microeca fascians*

SPECIES ACCOUNTS

Physical characteristics: Also called brown flycatchers, jacky winters are part of the subfamily Petroicinae. They are 5 to 5.5 inches (12.5 to 14 cm) long and weigh 0.5 to 0.65 ounces (14 to 18 grams). These birds have sand colored crowns and backs, white and brownish gray wings and tails, and white throats and undersides. Their eyes are striking, bearing a white ring over their eyes. A stripe that looks like the stroke of an artist's paintbrush in black runs from the beak, over the eye, and to the edge of the white eye ring.

Geographic range: Jacky winters are found in Australia and around Port Moresby in New Guinea. They occupy nearly all of Australia except for the desert regions, Tasmania, Kangaroo Island, and Cape York in the north.



Jacky winters usually dive for insects from a perch and take them either on the wing while in the air or by scooping them up as they fly low over the ground. (Illustration by Emily Damstra. Reproduced by permission.)

Habitat: Jacky winters prefer woodlands and scrub where there are trees and an abundance of insects. They will nest in gardens and on the edges of farmlands.

Diet: These birds eat flying insects, beetles, worms, and insect larvae (LAR-vee), the newly hatched wingless form of insects.

Behavior and reproduction: Jacky winters are not noisy birds. They stay within their local territories and often can be heard singing their repeated “peter-peter” or “jacky-jacky” songs or making whistling calls. They will often wag their tails from side to side or spread their tail feathers as a display when they feel threatened.

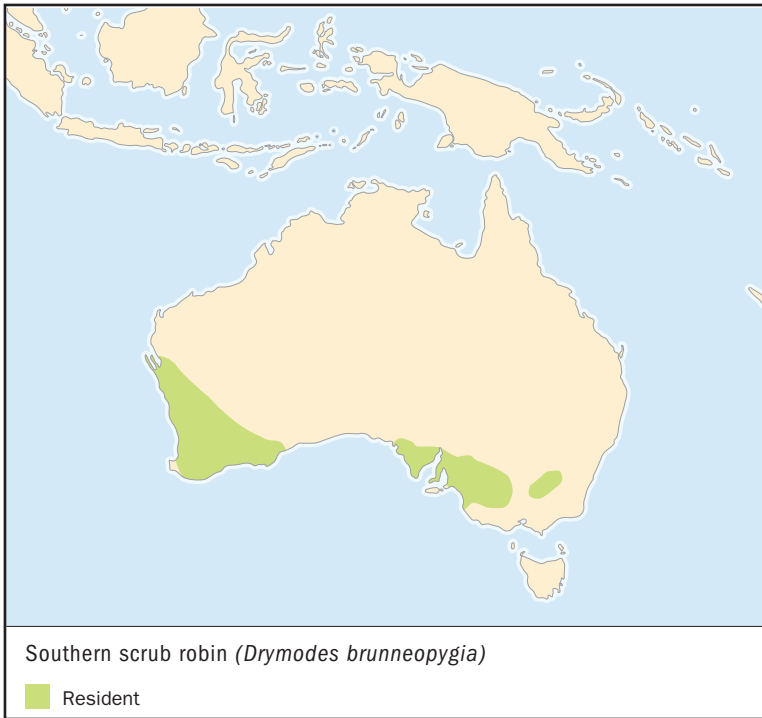
Jacky winters dive for insects from a perch and take them either on the wing while in the air or by scooping them up as they fly low over the ground. Sometimes, they will stand and pounce onto their food.

This species mates in the spring and summer months of the Southern Hemisphere, July through December. The female lays two to three light blue eggs that are blotched with lavender and brown.

The nest, made of grass and roots, is built in a fork of a branch of a tree that is either living or dead. The eggs are incubated for sixteen to seventeen days. Both parents feed the young birds for fourteen to seventeen days.

Jacky winters and people: Jacky winters are popular songbirds among birdwatchers.

Conservation status: Jacky winters are quite common, and their numbers are generally healthy. However, in farming areas, their populations are declining as native vegetation is cleared for more agricultural use. ■



SOUTHERN SCRUB ROBIN

Drymodes brunneopygia

Physical characteristics: The southern scrub robin is 8 to 9 inches (21 to 23 centimeters) long and weighs 1.25 to 1.35 ounces (36 to 38 grams). They have white to buff bellies with dark brown wings and white tipped tails. The wings have light grayish brown undersides.

Geographic range: This species lives in extreme southwestern Australia, along the south central coast into Victoria, and the southwestern part of New South Wales.

Habitat: As their name suggests, southern scrub robins live in the semi-arid scrub forests along the southern regions of Australia. Some populations live in the tea tree thickets along the southern coast. They also can be found in eucalyptus groves and acacia (uh-KAY-shah), short thorny shrubs and trees, scrub.

The southern scrub robin female builds a cup-shaped nest on or near the ground. Females lay one egg and incubate it. Both parents feed the young birds for nine to twelve days. (Illustration by Emily Damstra. Reproduced by permission.)



Diet: Southern scrub robins eat primarily insects, especially beetles, termites, and ants. Occasionally, they will eat fruit from low bushes.

Behavior and reproduction: Southern scrub robins find insects on the ground, foraging through leaf litter.

These birds are territorial and very shy. Their call is either a soft “pee, pee” or a more musical “chip, chip, par-ee.”

The southern scrub robin mates in Australia’s spring and summer from July to December. The female builds a cup-shaped nest on or near the ground. Females lay one pale green egg, blotched with black and brown and incubate it for sixteen days. Both parents feed the young birds for nine to twelve days. If threatened, the male will whistle and draw predators away from the nest and the eggs or young.

Southern scrub robins and people: There is no known significance between southern scrub robins and people.

Conservation status: This species is quite common and is not threatened. Their numbers, however, have declined because of extensive land clearing for agricultural use. ■

FOR MORE INFORMATION

Books:

Higgins, P. J., and J. M. Peter, eds. *Handbook of Australian New Zealand and Antarctic Birds: Pardalotes to Shrike-thrushes*. Melbourne: Oxford University Press, 2003.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Robbins, Michael. *Birds: Fandex Family Field Guides*. New York: Workman Publishing Company, 1998.

Schodde, R. *Directory of Australian Birds: Passerines*. Collingwood, Australia: CSIRO Publishing, 1999.

Simpson, K., and N. Day. *A Field Guide to the Birds of Australia*. Ringwood, Australia: Penguin Books Australia Ltd., 1996.

Stattersfield, A. J., David R. Capper, and Guy C. L. Dutton. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions and Birdlife International, 2000.

Weidensaul, Scott. *Birds: National Audubon Society First Field Guides*. New York: Scholastic Trade, 1998.

WHISTLERS

Pachycephalidae

Class: Aves

Order: Passeriformes

Family: Pachycephalidae

Number of species: 52 to 59
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Whistlers range from 5 to 11 inches (12.5 to 28 cm) in length and weigh 0.8 to 3.84 ounces (12.5 to 110 grams). They have sturdy bodies and large, round heads, giving this family of birds the name “thickheads.” They have small, round wings and strong feet and legs, making them more suited to hopping about on tree branches, rather than flying and diving. Their bills are thick and strong with a hook at the tip, allowing them to grasp insects and other small invertebrates. Some species have powerful jaws and bills that are shorter and fuller so that they can pry up bark to look for insects. Other species have small crests on the backs of their heads.

Most species are subdued brown, reddish brown, gray, or olive-gray for both males and females. However, there are some species that have bright markings in yellows, whites, and reds for males; females have duller coloring. Young birds are usually reddish brown.

GEOGRAPHIC RANGE

Whistlers are found in Southeast Asia, the Philippines, Indonesia, Micronesia, New Guinea, New Zealand, Australia, and islands in the southwest Pacific. New Guinea and Australia, in particular, have the greatest number of different species in their regions.

HABITAT

Some whistler species live in dense rainforests in the tropics or the forests and woodlands of temperate zones, and

others occupy mangrove swamps and mallee, or eucalyptus (yoo-kah-LIP-tus) trees that grow in semi-arid regions. The sandstone shrike-thrush builds its nest on sandstone escarpments, steep cliffs, that have few trees.

DIET

Whistlers eat insects, larvae (LAR-vee), and small invertebrates, animals without a backbone. The white-breasted whistler includes small crabs and mollusks in its diet. The large shrike-thrushes eat small vertebrates, animals with a backbone, baby birds, and eggs. Some birds will take fruit, especially berries, and the mottled whistler eats fruit exclusively.

BEHAVIOR AND REPRODUCTION

Members of this family are called whistlers because their songs are composed of whistling sounds, with each species having a distinctly different variation. The song of the crested bellbird is deep and bell-like. Pitohuis often sing duets. When startled by loud noises like thunder, whistlers will burst into song. They also sing during mating season to mark their territories.

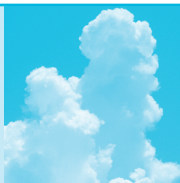
Whistlers forage for insects alone by looking among leaves and bark. Shrike-tits forage in small groups, and pitohuis will congregate with birds of different species or families that look like they do. The crested bellbird and the larger shrike-thrushes find food on the ground and will stand and pounce. The shrike-tits and the ploughbill remove bark from branches and look underneath for insects.

These birds generally stay in their territories. Those along the southeastern coast of Australia, however, will migrate to lower elevations during the winter.

Whistlers choose mates in the dry season and rear their young as the rainy season begins in the Southern Hemisphere's spring and summer. Those species that live in arid areas, however, will mate whenever climate conditions permit.

Males and females share nest-building and child-rearing duties, although this practice varies among species. Some males will even incubate, or sit on the eggs until they hatch. Females in other species will build the nest and incubate the eggs, but will receive help feeding chicks from males and, sometimes, from other members of a group who help with child rearing. This is called cooperative breeding.

Cup or bowl-shaped nests, made from twigs and bark, are built in a tree branch or shrub. In regions with tall forests, the



POISONOUS BIRD

In 1989, biologist Jack Dumbacher recorded the first instance of natural toxicity, or poison, in a bird. The bright orange-and-black hooded pitohui and four others in this genus (JEE-nus), group of related birds, have a neurotoxin, or poison that affects the nerves, in their skin, feathers, and flesh. This neurotoxin produces numbness when touched and is the same poison found in the poison dart frogs of Central and South America. Scientists have not been able to figure out how the birds, or the frogs, make the poison, or how these animals are able to survive with the poison in their systems.

nest can be as high as 33 feet (10 meters) from the ground. In more arid regions where tree growth is limited, the nests will be placed in shrubs and low vegetation within 3 feet (100 centimeters) of the forest floor. The sandstone shrike-thrush, which lives in a region with few trees, will build its nest on a cliff edge or in a rock crevice. Oddly, the crested bellbird places paralyzed caterpillars along the rim of the nest when the eggs are incubated.

Generally, whistlers have only one brood, or set of eggs hatched at the same time, each season, although some species will try to raise two or three. Females lay two to four speckled or blotched eggs that are incubated fourteen to twenty-one days and fed in the nest for fourteen to twenty-one days.

WHISTLERS AND PEOPLE

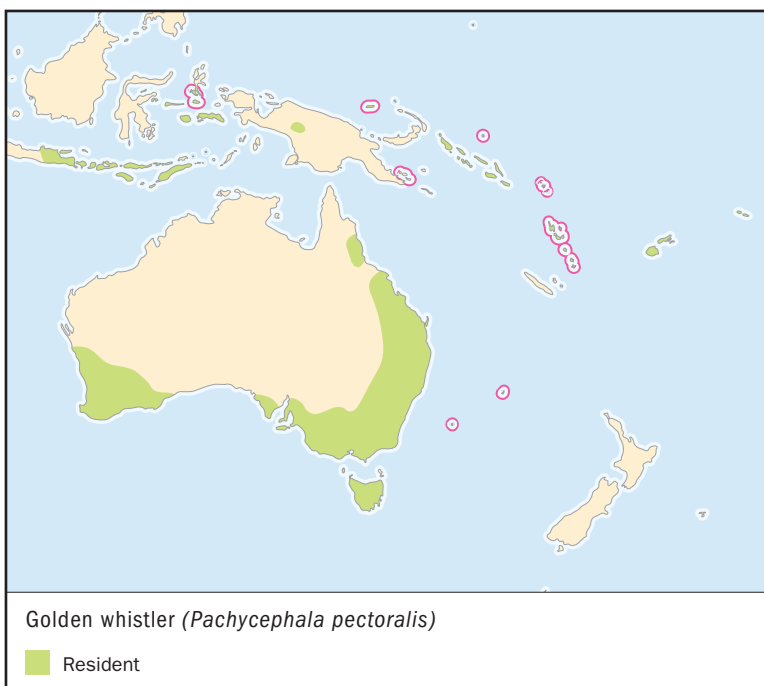
The whistlers' songs have made them favorites of bird watchers. Some species like the gray shrike-thrush will even build its nest among the foliage of potted plants outside homes.

CONSERVATION STATUS

The piopio is Extinct, or died out. The Sangihe shrike-thrush is Critically Endangered, facing an extremely high risk of extinction, due to loss of its forest habitat on the tiny Indonesian island of Sangihe.

The yellowhead is Vulnerable, facing a high risk of extinction, because its population in New Zealand has been preyed upon by stoats (ermine) that were introduced into the birds' territory. Stoats have eaten not only eggs and newly-hatched birds, but adult females as well.

The red-lored whistler of Australia, the white-bellied pitohui of New Guinea, and the Tongan whistler are Near Threatened, in danger of becoming threatened with extinction, due to habitat loss and foreign animals that were introduced into whistler territory.



GOLDEN WHISTLER

Pachycephala pectoralis

SPECIES ACCOUNTS

Physical characteristics: Also called the golden-breasted whistler, this bird is small, measuring 5.9 to 7.5 inches (15 to 19 centimeters) and weighing 0.8 to 0.96 ounces (21 to 28 grams). It has a black bill, head, and band below a white throat. The back and wings of the male are olive green, and the undersides are sulfur yellow. The female has a muted olive gray body with a pale yellow belly. Both sexes have reddish brown eyes. Young birds of both sexes are reddish, changing to the muted colors of the female. When they are fully mature, male birds will display bright plumage.

Geographic range: Over seventy subspecies of golden whistlers live in Indonesia, New Guinea, Tasmania, and the southern and eastern coasts of Australia, as well as small Pacific Islands such as Fiji and the Solomon Islands.

Habitat: Golden whistlers have adapted to a variety of habitats that support trees, ranging from the dry mallee to the wet mangrove

Both golden whistler parents feed their chicks after they've hatched. (© Eric Lindgren/Photo Researchers, Inc. Reproduced by permission.)



swamps. Occasionally, these birds will occupy trees in orchards and parks. Golden whistlers nest below 6,900 feet (2,100 meters).

Diet: This species eats mainly insects, spiders, and berries.

Behavior and reproduction: Golden whistlers mate in the spring of the southern hemisphere, September to January, and only have one brood. Both the male and the female build a cup-shaped nest from bark and twigs, lashed together with spider webs and lined with fine grass. Placed in the fork of a branch or nestled deep in a shrub, the nest can be as high up as 20 feet (6 meters). The female lays one to three spotted eggs of varying colors. The eggs can be cream, buff, salmon, or pale olive green with spots or blotches of greenish brown, or reddish brown, gray, or lavender. Sometimes, these blotches collect around the larger end of the egg like a cap. Both parents incubate the eggs, usually fourteen to seventeen days. The young birds are fed by their parents for ten to thirteen days.

This species forages among tree branches in the middle story of the forest canopy, only searching the lower level when necessary. Sometimes, golden whistlers will hawk, or dive, for insects they see, but usually they settle on a branch and glean insects and berries from their perches.

These birds are quiet, except when mating, and are not social, living alone or with a mate. Their song is melodious “wi-wi-wi-tu-whit.” Generally, they stay within their territories, though some southeastern

Australian birds will migrate to the north or west during the winter or descend to lower elevations.

Golden whistlers and people: The golden whistler is appreciated by bird watchers.

Conservation status: Though this species was once quite common, it is now a protected bird in some areas of Australia and efforts are being made to ensure that these birds can increase their population numbers.



Variable pitohui (*Pitohui kirhocephalus*)

■ Resident

VARIABLE PITOHUI

Pitohui kirhocephalus

Physical characteristics: A medium-sized bird, the variable pitohui is 9 to 10 inches (23 to 25.5 cm) long and weighs 3 to 3.5 ounces (85 to 100 grams). It has a black head and wings, a reddish back, an orange breast and belly, and black legs. This general coloring, however, varies among its twenty subspecies.

Geographic range: This species can be found in New Guinea and neighboring islands.

Habitat: The variable pitohui nests in thick undergrowth at the edge of forests up to 4,950 feet (1,500 meters). It can even live in forests that have been greatly disturbed.



Although it generally hides in dense vegetation with its mate, the variable pitohui will forage with other birds, including birds of other species. (Illustration by Emily Damstra. Reproduced by permission.)

Diet: This species eats insects and berries.

Behavior and reproduction: Though it generally hides in dense vegetation with its mate, the variable pitohui will forage with other birds, including many that aren't its own species. Its song is musical and pleasant. Mated pairs will often sing duets together. Little is known about the mating behavior of this species.

The variable pitohui and people: This bird has been rarely hunted for food because of its unpleasant taste. In some cases, it is extremely poisonous.

Conservation status: The variable pitohui is not in danger of dying out. However, it is common in some areas, and rare in others. ■

FOR MORE INFORMATION

Books:

Higgins, P. J., and J. M. Peter, eds. *Handbook of Australian, New Zealand and Antarctic Birds*. Vol. 6, *Pardalotes to Shrike-thrushes*. Melbourne: Oxford University Press, 2003.

Perrins, Christopher. *Firefly Encyclopedia of Birds*. Richmond Hill, Canada: Firefly Books, 2003.

Robbins, Michael. *Birds (Fandex Family Field Guides)*. New York: Workman Publishing Company, 1998.

Schodde, R. *Directory of Australian Birds: Passerines*. Collingwood, Australia: CSIRO, 1999.

Simpson, K., and N. Day. *A Field Guide to the Birds of Australia*. Ringwood, Australia: Penguin Books Australia Ltd., 1996.

Weidensaul, Scott. *Birds (National Audubon Society First Field Guides)*. New York: Scholastic Trade, 1998.

family CHAPTER

PSEUDO BABBLERS

Pomatostomidae

Class: Aves

Order: Passeriformes

Family: Pomatostomidae

Number of species: 5 species

PHYSICAL CHARACTERISTICS

Pseudo babblers are medium-sized birds, measuring 7 to 10.5 inches (18 to 27 centimeters) long, and weighing 1.6 to 3.2 ounces (45 to 90 grams). They have short wings, long fan-shaped tails, and thin, pointed bills that are ideal for probing and digging into the ground or bark. Their long, powerful legs and dark, strong feet allow them to hop for long periods along the forest floor and among low tree branches. Their bodies are mainly a solid rust color or a dull brown highlighted with white brows, throat, and tail tip. There is no difference in color between males and females or between young and mature birds. The only change that comes with adulthood is a longer bill. The rufous babbler and the gray-crowned babbler, however, change the color of their eyes on adulthood, from the normally brown eyes of this family of birds to pale cream.

GEOGRAPHIC RANGE

Australia and lowland New Guinea.

HABITAT

Pseudo babblers of New Guinea live in regions up to 1,500 feet (500 meters). Members of this family can also be found in the western Papuan Islands and throughout Australia. They avoid the desert regions of the central and northwest and the southeastern and southwestern seacoasts. Mostly, pseudo babblers forage under eucalyptus (yoo-kah-LIP-tus) trees and in clearings among acacia (uh-KAY-shah) trees. In New Guinea, they occupy rainforests. Where the foraging territories overlap,

phylum

class

subclass

order

monotypic order

suborder

▲ family



COMMUNAL BREEDING

The survival of the gray-crowned babbler depends on the number of helper birds in each social group. These birds are critical to the rearing of the young and the defense of the group's territory. Helpers in these social groups usually are the siblings of the primary mating pair or the pair's own grown offspring. Unlike bees, which also have a highly developed social structure, helper birds are able to breed and do so when the primary pair has died and a new primary pair takes over leadership of the group.

different species of pseudo babblers do not divide the resources between groups; they openly compete for the same foods in the same areas.

DIET

This family of birds eats mainly insects and spiders but sometimes will eat seeds, buds, and fruit, and even small reptiles.

BEHAVIOR AND REPRODUCTION

Social birds, pseudo babblers live and forage in communal groups of twelve or more birds. These groups consist of one primary breeding pair, their offspring, and even their siblings. They will roost, feed, rest, and preen together. They constantly call out to each other as they move about the forest floor as if to keep in hearing range of one another. At night, they all cluster together in large, sturdy dormitory nests to sleep.

These birds forage in permanent territories of approximately 124 acres (50 hectares), using their long bills to shift through the litter on the forest floor. Sometimes, they will dig into the ground or poke into the trunks and branches of trees. If they find a large insect or small reptile, they will share the food with the group.

Depending on the location and the species, breeding occurs in the spring and early summer of the Southern Hemisphere. In New Guinea, however, breeding occurs whenever the conditions within the region can support the young. The primary breeding pair builds the dome-shaped nest, made from twigs and plant fibers and lined with animal hair and finer plant materials. These nests are constructed in the upper branches of shrubs and trees up to 6.6 to 16.2 feet (2 to 8 meters) above the ground. Rufous babblers in New Guinea anchor their nests on the tips of palm fronds.

The primary female lays two to five pale gray eggs that are covered with dark lines. While she incubates, or sits on the eggs until they hatch, for sixteen to twenty-three days, she is fed by all of the members of the social group. The group will also help feed the young hatchlings for twenty to twenty-one days.

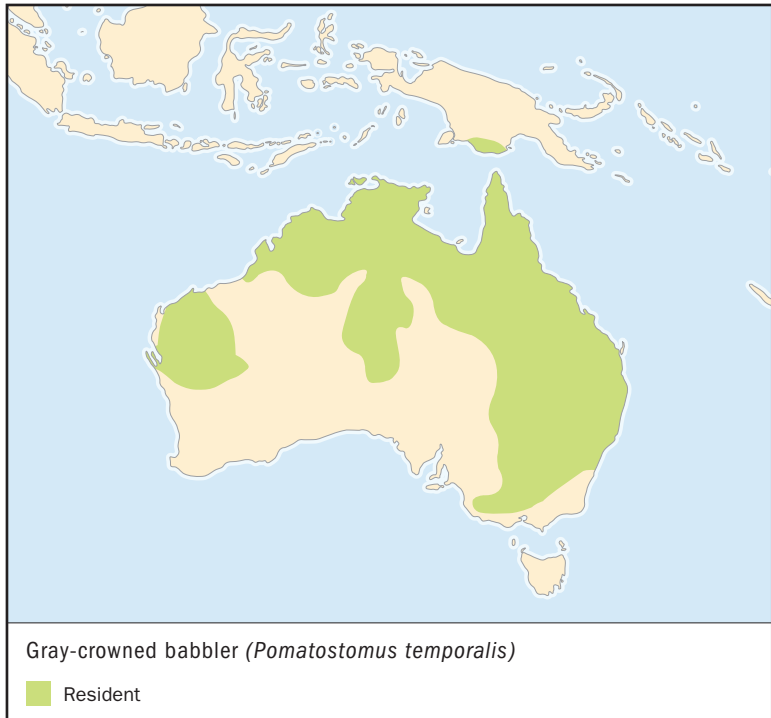
PSEUDO BABBLERS AND PEOPLE

Pseudo babblers have no known significance to humans.

CONSERVATION STATUS

Pseudo babblers in some areas of Australia are threatened, or at a risk of extinction, or dying out. They have disappeared from some regions altogether. This is a result of habitat loss due to clearing land for agriculture and the introduction of invasive plants and livestock grazing.

SPECIES ACCOUNT



GRAY-CROWNED BABBLER *Pomatostomus temporalis*

Physical characteristics: The gray-crowned babbler is also called the chatterbox, the happy family, the red-breasted cackler, and the happy jack. It is the largest of the pseudo babbler, measuring 9.5 to 10.5 inches (24 to 27 centimeters) long and weighing 2.2 to 3.2 ounces (65 to 90 grams). This bird has a dull brown body with the characteristic pseudo babbler white markings. It displays a red-dish patch on its outer wings when it flies, and its undersides range from dull brown to deep russet brown. It has a brown bill, black feet, and pale cream-colored eyes. The back and center crowns of the head are gray, giving the bird one of its names.

Geographic range: The gray-crowned babbler can be found mainly in northern and eastern Australia, and is also located in a small region in southern New Guinea.



Gray-crowned babblers live in groups, and if there are several breeding pairs within the group, they will use the same nest and share incubation duties. (Illustration by Marguette Dongvillo. Reproduced by permission.)

Habitat: The gray-crowned babbler lives in trees of moderate height and sometimes in shrubs. It prefers eucalyptus, cypress, and paper-bark trees. Since much of its habitat has been cleared for agriculture, this species has been limited to clusters of trees along roadways in their territories. They stay within these narrow bands of trees because they are not strong fliers and are reluctant to fly over open land.

Diet: This species eats mainly insects.

Behavior and reproduction: The gray-crowned babbler is not afraid of heights. It will forage as far as 66 feet (20 meters) up a tree, turning over leaves and poking into crevices in bark. In drier regions where trees do not grow as tall, this bird will also sift through the litter on the forest floor and even scratch in the dirt, looking for food. Sometimes, it will try to catch flying termites on the wing.

This species is rather social, foraging in groups of twelve to fifteen over 25 to 37 acres (10 to 15 hectares) and sleeping together in dormitory nests. Their loud “yahoo yahoo” calls mark territory but also warn of predators and act as a means of staying in touch with all members of the social group.

These birds find mates not only in the Australian spring and summer, but also in the fall. Two to four eggs are laid in huge, messy, dome-shaped nests made from twigs that are built in the forks of branches of shrubs or trees 9.8 to 32.8 feet (3 to 10 meters) high.

family CHAPTER

AUSTRALIAN CREEPERS

Climacteridae

Class: Aves

Order: Passeriformes

Family: Climacteridae

Number of species: 8 species

PHYSICAL CHARACTERISTICS

Australian creepers, or treecreepers, tend to be small birds about the same size as sparrows. They average in length from 5.7 to 6.9 inches (14.5 to 17.5 centimeters), with an average weight of 0.75 to 1.15 ounces (21 to 32 grams). Their legs are short, with long toes that have claws that are curved and long. They have short necks, and long decurved, downward curved, bills. Their color varies from a reddish brown, to brown, to almost black. Each species displays a streak, either white, black, or brown, on their undersides, and display an off-white to rufous, red, bar across their flight feathers that are noticeable when they are in flight. Some species have white throats, for instance, the white-throated treecreeper. Brows range in color from a pale buff, as in the case of the brown treecreeper; to red, in the red-browed treecreeper; to white, as shown in the white-browed treecreeper. The difference between males and females is slight. Orange patches on the neck, throat, or breast usually distinguishes the female from the male.

GEOGRAPHIC RANGE

Australian treecreepers are distributed throughout Australia, except in the sandy and stony deserts, or grasslands. One of the eight species, the Papuan treecreeper, is native to New Guinea, where it is found in some of the mountains. However they are unexplainably absent from an area of approximately 250 miles (400 kilometers) in central New Guinea. The island of Tasmania, off the southeastern coast of Australia, has no treecreepers despite the fact that it has a natural environment

phylum

class

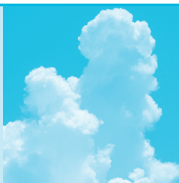
subclass

order

monotypic order

suborder

▲ family



GREAT AUSTRALASIAN RADIATION

The Great Australasian Radiation refers to the period of time when many different birds evolved across Australia and Asia—the birds evolved in isolation for eons. Australian treecreepers are part of that radiation. Data has indicated that they are related to lyrebirds, scrub-birds, and bowerbirds. The birds' behavior had originally placed them near the northern treecreepers, spotted creepers of Africa and India, and Philippine creepers. But they are not related to any of these birds. Their tree-climbing is an example of convergent evolution, where species develop similar characteristics although they are not related.

suitable to the birds—rainforests, eucalyptus forests, and woodlands. The explanation that has been suggested for this is that Tasmania did not have the extensive forest before it became isolated from the mainland, and treecreepers are poor fliers, so have not colonized Tasmania since then.

HABITAT

Australian treecreepers live in various environments throughout the continent, preferring eucalyptus forest, dry savanna, or semi-arid mulga, an evergreen shrub, that inhabits Australia's interior. Brown treecreepers and rufous treecreepers can also be found in mallee—low woodland with eucalyptus (yoo-kah-LIP-tus) that are multi-stemmed. As a rule, these treecreepers do not inhabit areas that have a dense understory, vegetation under the forest canopy.

DIET

Australian treecreepers are primarily insectivores, insect eaters, with ants composing the biggest portion of their diet. They forage, search for food, for ants and other insects along the trunks and branches of trees they have climbed, especially trees that have rough bark. Treecreepers are known to peel bark, or dig into fissures, cracks, in order to find their prey. Their long claws make it possible for them to hang onto a trunk or branch in an upside down position, but they seldom move downward on a tree. The other insects they eat include beetles, larvae, and spiders. Rarely, a treecreeper might take nectar or seeds in addition to insects.

BEHAVIOR AND REPRODUCTION

Australian treecreepers are usually found in pairs, family groups, or alone. When they are found in pairs, or family groups, territorial defenses are more obvious, such as chasing and calling. Otherwise, the birds tend to be sedentary, stay in one place. Only in some young birds does any migration, travel, occur, and then it is only within several miles or kilometers.

Most species have a voice that consists of shrill, high-pitched whistles. Their display includes tail clicking and flicking.

Some species breed in pairs. Those include the white-throated treecreeper in Australia and New Guinea. Most are cooperative breeders, where young males from previous breedings help care for and protect the current chicks. Those species that breed cooperatively include the red-browed treecreeper, the black-tailed treecreeper, the brown treecreeper, and the rufous treecreeper. Neighboring groups of treecreepers often have close relationships with each other, with males going only one or two territories away from their homes to live. The breeding season is from August to January, with many attempts to breed. It is not uncommon for Australian treecreepers to have two broods a year. The nests are built deep into tree hollows, or sometimes in a hollow log or other cavity. Nests are made of grasses, plant down, soft bark, and animal fur. The female is known to sweep snakeskin, insect wings, and even plastic around the entrance to the nest. One or more males assist the female in incubation, the process of sitting on eggs to provide warmth for development. Eggs are found in clutches of two or three and are white to pinkish in color with brown markings. The incubation takes place over fourteen to twenty-four days, with fledging at twenty-five to twenty-seven days.

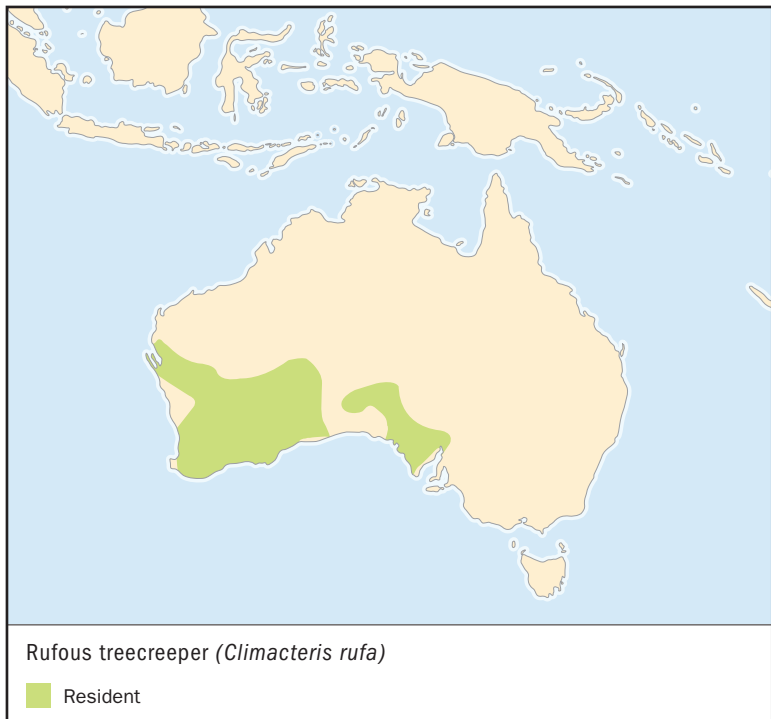
AUSTRALIAN CREEPERS AND PEOPLE

There is no special significance between Australian treecreepers and people.

CONSERVATION STATUS

Due to the clearing and breakdown of woodland, some species have declined in numbers. Three subspecies have been categorized as Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNT



RUFIOUS TREECREEPER *Climacteris rufa*

Physical characteristics: Rufous treecreepers have faces that are cinnamon-rufous, reddish brown, with rufous brows, and cheeks that have a black eye stripe. Their undersides are rufous with white streaks for the female, and black with white streaks on the male. Their upperparts are gray-brown. Their length averages 6.7 inches (17 centimeters). These birds weigh between 1.1 and 1.2 ounces (30 and 33 grams).

Geographic range: Rufous treecreepers can be found throughout southwestern Australia and on the Eyre Peninsula of South Australia.

Habitat: Australian treecreepers live in eucalyptus forest and accompanying woodland, and in the mallee, dense thickets formed by various shrubby species of Australian eucalyptus.

Diet: Rufous treecreepers, like other species of Australian treecreepers forage for their food along the trunks and lower branches of eucalyptus and casuarinas, and on the ground. They are primarily insectivores, with ants as their preference; but also eat centipedes, snails, small reptiles, and seeds.

Behavior and reproduction: The rufous treecreeper lives in family groups that are made up of the breeding pair and its offspring from previous breedings. They tend to be sedentary, and make peeping and churring calls at their predators. Their voice is like the brown treecreeper with short, staccato notes and harsh rattles, with chuckling songs, but they are higher in pitch.

This bird has a breeding season from August to January. Their nests, like those of other Australian treecreepers, are built deep into the hollows of tree branches, stumps, and fallen logs. A clutch has one to three eggs that the female incubates for seventeen days. The young are fed by both parents, and by helpers, usually the young of previous breedings. At twenty-six days they fledge with a great success rate—one study in western Australia showed that 78 percent of attempts succeeded.

Rufous treecreepers and people: There is no known significance between rufous treecreepers and people.

Conservation status: As a species, the rufous treecreeper is not threatened. Populations have declined, with extinction in some local areas of the wheat growing region of western Australia where the land has been cleared extensively. ■

FOR MORE INFORMATION

Books:

Campbell, Bruce, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Garnett, S. T., and G. M. Crowley. *The Action Plan for Australian Birds 2000*. Canberra, Australia: Environment Australia, 2000.

Higgins, P. J., J. M. Peter, and W. K. Steele, eds. *Handbook of Australian, New Zealand and Antarctic Birds. Tyrant-flycatchers to Chats*, vol. 5. Melbourne, Australia: Oxford University Press, 2001.

Sibley, C. G. *Birds of the World*. On diskette, Windows version 2.0. Santa Rosa, CA: Charles G. Sibley, 1996.

Sibley, C. G., and J. E. Ahlquist. *Phylogeny and Classification of Birds: A Study of Molecular Evolution*. New Haven, CT: Yale University Press, 1990.

Simpson, Ken, and Nicolas Day. *The Birds of Australia*. Dover, NH: Tanager Books, 1984.

Periodicals:

"The Demography and Cooperative Breeding Behaviour of the Rufous Treecreeper, *Climacteris rufa*." *Australian Journal of Zoology* (December 2001): 515–537.

Web sites:

"Austral-Papuan Tree-creepers." Treecreepers, Lyrebirds, Bowerbirds and Fairy Wrens of the World. http://camacdonald.com/birding/Sampler6_TreecreepersLyrebirdsBowerbirdsFairyWrens.htm#Treecreepers (accessed on June 18, 2004).

"Australian Treecreepers, Climacteridae." Bird Families of the World. <http://www.montereybay.com/creagrus/treecreepers.html> (accessed on June 18, 2004).

"Australian Treecreepers." Birds of the World. <http://www.eeb.cornell.edu/winkler/botw/climacteridae.html> (accessed on June 18, 2004).

"Rainforest understory." Rainforest Education. <http://www.rainforesteducation.com> (accessed on June 18, 2004).

family CHAPTER

LONG-TAILED TITMICE

Aegithalidae

Class: Aves

Order: Passeriformes

Family: Aegithalidae

Number of species: 8 species

PHYSICAL CHARACTERISTICS

Long-tailed titmice range in length from 3.5 to 6.3 inches (8.9 to 16 centimeters) and weigh 0.14 to 0.32 ounces (4 to 9 grams). The birds derive their name from their characteristic long tails, with the longest tail belonging to the long-tailed tit, whose tail makes up half of its length. Both male and female adults tend to be alike in their feathers, with dark gray or brown, and sometimes lighter shades, on top, and with white underneath. Some species have what looks like a black mask. Some have pink tints to their feathers on their tails and shoulders. Their feathers are arranged loosely all over their bodies, giving them a fluffy look. Given their size and appearance, they are often a favorite with birdwatchers.

GEOGRAPHIC RANGE

One species of titmice, the bushtits, can be found in western North America, from the northernmost parts of British Columbia to the southern regions of Mexico. Five species are found in the Himalayas, and mountainous regions of western China. Long-tailed tits, the species that is most common, have a range from Western Europe and Asia, to China and Japan. Pygmy tits, the smallest titmice species, can only be found on the Indonesian island of Java.

HABITAT

Long-tailed titmice can be found primarily inhabiting the shrub layers and edges of forests and woodlands among the leafy trees and dense thickets. Those inhabiting the Himalayas

phylum

class

subclass

order

monotypic order

suborder

▲ family

and mountains in China are normally found at elevations between 4,000 and 8,860 feet (1,200 to 2,700 meters). White-throated tits can be found living in the mountains at elevations as high as 13,100 feet (4,000 meters), up to the top of the tree line, the elevation where trees do not grow. North American bushtits are also at home in suburbs, parks, and gardens.

DIET

Long-tailed titmice are primarily insectivores, eating insects, their larvae, the newly hatched wingless form of insects, and eggs, spiders, and other invertebrates, animals without backbones, and sometime eating fruit, primarily berries, and seeds. They show remarkable skill in the use of their bodies and limbs. These titmice are at ease even when hanging from the thinnest branches, as they hold their food with one claw and nibble at it with their stubby bill.

BEHAVIOR AND REPRODUCTION

Most of the species of long-tailed titmice live most of the time in flocks of their own species. These small flocks usually number between five and ten birds. Occasionally, they might also be found in flocks of composed of related birds. The birds of this family tend to be sociable. Their chatter is usually heard before they are visible to observers. Some groups can be observed flying in a line of single birds from between the bushes. At night the birds roost, sleep, together, lining up on a branch, and huddling in order to preserve body heat. In that case, the birds that are the largest of the flock are most likely found in the middle of the line, the point at which most of the heat is held. Long-tailed tits can sometimes be found roosting in ground holes.

Long-tailed titmice have a breeding season from January to July. The pygmy tit of Java breeds from August to November. During the breeding season, the flocks break down into individual pairs, though if it is cold, the largest group still might roost together. If the nest has been built already, the individual pair roosts alone in their nest.

Long-tailed titmice build nests that are an enclosed oval shape, or possibly a more elongated structure. They are made from moss, lichen, spider silk, and plant material. The light color of the nests are most likely an attempt to protect the nest by making them the same color as the light background breaks in the tree canopy, upper layer of the forest. A hole is put at

the top of the nest to serve as an entrance. Nests have been constructed with a soft lining that might include more than 2,000 feathers. These nests are usually found low in the woodland shrub layer, held up off the ground by branches. Clutch size, the number of eggs laid at the same time, is between two and twelve eggs. The clutch is incubated for a period of twelve to eighteen days. Both males and females, and sometimes other members of the flock will feed the young. Fledging, growing feathers needed for flight, occurs within three weeks of hatching. Chicks remain with the parents' flock for the first winter. The birds raise two broods, a group of birds raised at the same time, a year. The bird has a life span of up to eight years.

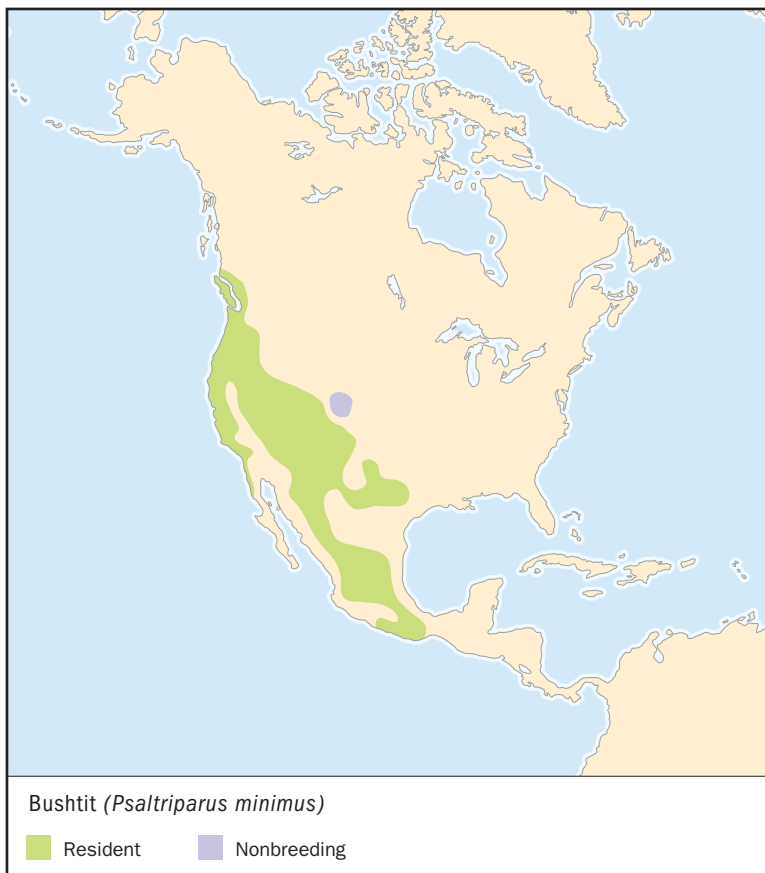
LONG-TAILED TITMICE AND PEOPLE

Bushtits are common visitors to garden feeders. Other long-tailed titmice do not visit feeders, but are often observed in garden trees and in parks and remain popular with birdwatchers.

CONSERVATION STATUS

Long-tailed titmice can be found in large numbers throughout their habitat range, and are not classified as a threatened bird family. However, up to 80 percent of the population can die during a hard winter. The species native to the Himalayas and Chinese mountains are also common locally, except for two species, the sooty tit and the white-throated tit. They are both listed as Near Threatened, close to becoming threatened with extinction. The pygmy tits of Java are also very common, however, the continual danger of deforestation, cutting down of forest, might be a concern for their survival in the future. As a species that relies on the dense forests for their habitat, the loss of such forests would definitely pose a threat.

SPECIES ACCOUNT



BUSHTIT *Psaltirparus minimus*

Physical characteristics: Bushtits range in length from 4 to 4.5 inches (10 to 11.4 centimeters), with an average weight of 0.18 to 0.21 ounces (5 to 6 grams). They are tiny birds, and like other long-tailed titmice have loose feathers that can result in a fluffy appearance, especially when spreading their plumage. The bushtits that inhabit the interiors of their range are usually gray on top with paler gray undersides; the coastal birds have brown caps. Southwestern members of this species have black masks that go all the way to their ears. This variety was once considered a separate species, the black-eared bushtit, but is no longer categorized separately. Female bushtits

are known for their cream to yellowish eyes, different from the males and young that have dark brown eyes.

Geographic range: The bushtit is commonly found in western North America, along the west coast from Mexico through the United States, and to the northern parts of British Columbia.

Habitat: The bushtit most commonly inhabits deciduous forests, where trees undergo seasonal change, and mixed woodlands, as well as parks and gardens. They can be found in suburbs and even in cities within their range.

Diet: As with other family members, the bushtit is primarily an insectivore, feeding on insects and spiders, as well as occasionally eating fruit and berries.

Behavior and reproduction: Bushtits are social birds that tend to live and travel in large flocks. They roost together, especially during the winter when they attempt to conserve body heat by huddling together. When spring arrives, the young leave the larger flock to

establish their own colonies in another territory. Their song is a high thin call that resembles a buzzy, excited twittering sound. Some also are known to have a thin, trilled sort of call.

Breeding occurs from January to June, with courtships, mating behaviors, that are brief and include posturing, posing, and calling, with no particular song yet discovered. The nests they create are elaborate—a pendant nest that resembles a pocket. They can take from two weeks to almost two months to complete. Nests are hung from a hood of a woven spider web, which is hanging from a branch. They are monogamous (muh-NAH-guh-mus), having only one mate, with both male and female building the nest. Should the pair be disturbed while they are in the process of nest building, or laying or incubating, sitting on, eggs, it is not uncommon that they leave the nest site, even change mates, and build a new nest. The incubation of the eggs lasts for twelve days and is done by both sexes, with both of the pair roosting on the eggs in the nest at night. Each clutch averages five to seven eggs. The young are altricial (al-TRISH-uhl), helpless, blind and naked when hatched. The young stay in the nest for fourteen to fifteen days and are fed by both sexes. Sometimes helpers are present in caring for the young, but rarely are they from a previous brood. They have two broods a year.

Bushtits and people: Bushtits provide interesting entertainment to people and birdwatchers due to their cute appearance and fluffing of their feathers.

Conservation status: This species is not threatened, and has been known to be increasing in population in certain areas of its range. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. London and New York: DK Publishing, 2001.

Campbell, Bruce, and Elizabeth Lack, eds. *A Dictionary of Birds*. Vermillion, SD: Buteo Books, 1985.

Elphick, Chris, John B. Dunning Jr., and David Allen Sibley, eds. *The Sibley Guide to Bird Life & Behavior*. New York: Alfred A. Knopf, Inc., 2001.

Web sites:

"Bushtit *Psaltiriparus minimus*." BirdWeb: Seattle Audubon's Online Guide to the Birds of Washington State. <http://www.birdweb.org/birdweb/species.asp?id=332> (accessed on June 20, 2004).

"Family Aegithalidae (Long-tailed Tits)." University of Michigan Museum of Zoology Animal Diversity Web. <http://animaldiversity.ummz.umich.edu/site/accounts/classification/Aegithalidae.html> (accessed on June 20, 2004).

"Long-tailed Tits (Aegithalidae)." Bird Families of the World. <http://www.montereybay.com/creagrus/longtailedtits.html> (accessed on June 20, 2004).

Michaels, Patricia A. "Bushtit (Aegithalidae) Picture and ID." Green Nature. <http://greennature.com/article908.html> (accessed on June 20, 2004).

PENDULINE TITMICE

Remizidae

Class: Aves

Order: Passeriformes

Family: Remizidae

Number of species: 10 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Penduline titmice (sometimes called penduline tits) are small passerines (PASS-uh-reenz; perching songbirds) with short wings and tails, delicate heads, and straight bills. Plumage (feathers) is the same over the entire body, being dull-colored in both males and females. But the actual body color and shape differs widely among species. Upperparts range from pale grays, whites, and yellows to chestnut and olive green, and underparts range from white to yellow. Some adult species have black masks on the head and deep chestnut on the back. A few species are bright yellow or red. Tail length also varies: some are very short while others are relatively long. Their feet have four toes, all at the same level. The hind toe points backward, allowing them to firmly grip slender perches. One of the more constant features of penduline tits is the bill, which is shaped like a cone with a needle-like point, more sharply pointed than in other titmice. Penduline tits are 3.0 to 4.3 inches (7.5 to 11 centimeters) long and weigh between 0.16 and 0.44 ounces (4.6 and 12.5 grams).

GEOGRAPHIC RANGE

Penduline tits are widely found from Africa through Europe and into Asia. One species, the verdin, is located in North America, specifically in southwest United States and northern Mexico.

HABITAT

Penduline tits are found in a large range of open country habitats including deserts, large reed beds in marshes and along riverbanks, and scrublands and forests.

DIET

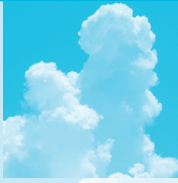
Penduline tits eat many invertebrates (animals without backbones), fruits, and small seeds. They grasp food with one foot while pecking at it with their bill. The birds often search in spider's nests and crevices (cracks) in trees.

BEHAVIOR AND REPRODUCTION

Penduline tits are very active and quick birds. They are usually found in pairs or in small groups for most of the year. Species that live in forests are found in the tree canopy (tree-tops). Because of their ability to move quickly and skillfully, penduline tits easily move through branches and the undersides of twigs and branches. They often roost in groups at night. Penduline tits that live in northern temperate (mild) climates migrate during the breeding season. Others that live in warmer climates are generally sedentary (tend not to migrate, move seasonally). The birds are fairly quiet but do sometimes give out high-pitched calls and songs that range from various notes to others that only repeat certain notes. They sometimes sound a "ti ti ti" followed by a short whistle.

During the breeding season, penduline tits are territorial, but only defend a small area just around the nest. Since the birds use only a small nesting area, other penduline tits will nest close by in a colony-type arrangement; that is where large numbers of birds nest together. The mating system is very complex. Penduline tits can be monogamous (muh-NAH-guh-mus; having one mate) or polygamous (puh-LIH-guh-mus; having more than one mate). Breeding takes place from April to July in northern temperate climates, while in African species, breeding depends on local climates (with some species breeding during the wet season and others breeding during the dry season).

The nests of penduline tits are "pendulous" (meaning that they hang loosely from a base). Nests are found in many different locations such as branches of trees and shrubs and reeds along waters. The shape of nests are usually teardrop or pear-like with a hole near the top; except for one species that builds a cup-shaped nest, which does not hang. A ledge is sometimes built near the entrance, which is fastened together for protection from its enemies. Penduline tits make nests from plant matter that is pressed flat to produce a strong outside covering. It is lined inside with soft grasses, mosses, and lichens (plants growing on rocks).



PENDULINE TITMICE NESTS ARE PENDULOUS

Penduline titmice get their name because their nests are pendulous. Pendulous means to hang loosely, which is how their nests are constructed. Male penduline tits build elaborate bag-like nests of feathers and soft plant fibers. Nests hang suspended, usually from tree branches or off of reeds above water.

Females lay white eggs with red spots, except for the species verdin, whose eggs are bluish green. Females lay two to nine eggs. The incubation period (time it takes to sit on eggs before hatching) is between thirteen and seventeen days, and the nestling period (time necessary to take care of young birds before they can leave the nest) is about eighteen days. The caring of the chicks is performed by both parents, with some species using helpers to assist the parents.

PENDULINE TITMICE AND PEOPLE

People show little interest toward penduline tits other than admiring them for their complicated construction of nests. In the past, their nests have been used in eastern Europe as slippers for children and in Africa as purses within certain tribes.

CONSERVATION STATUS

Penduline tits are not considered to be threatened. Some species, however, are declining in numbers due to increasing amounts of farming and general human development of their habitat.



VERDIN

Auriparus flaviceps

SPECIES ACCOUNT

Physical characteristics: Tiny, rounded short-tailed verdins have a dull yellow head and throat; chestnut shoulder patch; dark gray upperparts, and light gray underparts. They have stout but sharply pointed black bills and strong legs. Males and females look alike. Adults are 4 to 4.5 inches (10 to 11 centimeters) long and weigh between 0.21 and 0.29 ounces (6.0 to 8.2 grams).

Geographic range: Verdin are found in the southwestern United States and Mexico. It is the only species within the family Remizidae that lives in the New World (within the Americas).

Habitat: Verdins prefer arid lowland and hilly scrub desert that contains scattered thorny bushes and cacti (KAK-tie or KAK-tee); they especially like mesquite and creosote bushes.

Diet: Verdins eat invertebrates (such as insects and their larvae and eggs, and spiders), seeds, and fruits such as wild berries. Much of their water is obtained through the eating of fruits and insects. They actively forage for food among twigs, leaves, and buds, sometimes hanging upside down while clinging to twigs and leaves.

Behavior and reproduction: Verdins are usually found in singles or pairs, and in family groups after the breeding season. They do not migrate, being more solitary than other penduline tits. During the winter, they may join other species of birds while foraging. Verdins are very active, flittering about and constantly flicking their tails up. Songs of verdins consist of a gloomy-sounding, three-note series of “tswee-swee, tswee”, with the second note higher. Their call is a high-pitched “tseewf” or a lower-pitched “tee-too-too” or “tee-too-tee-tee.”

Verdins breed from March to June. They are monogamous and solitary nesters. Nests, which are unique from other penduline tits, are made in the shape of a sphere (ball-like), and constructed by adding several layers of thorny and non-thorny twigs, finally lining the inside with softer materials (such as leaves, grasses, feathers, plant down, and spider’s silk). The finished nest is around 8 inches (20 centimeters) in diameter, and may consist of as many as two thousand twigs. Nests are usually near the end of a low limb, or in the fork of a bush or tree, and normally from 2 to 20 feet (0.6 to 6.1 meters) above the ground. Nests are also built 10 or more miles (16 or more kilometers) away from water sources. Males may build several nests within a territory, with the female selecting one of them, which may be then used for several years. The thick walls protect them from the hot desert sun and the cold desert nights. Nests built early in the breeding season have side entrances facing away from cool winds to conserve heat, while those built toward the end of the breeding season face the cooling wind during hot weather.

Females lay a clutch (number of eggs hatched together) of between two and four bluish green eggs (sometimes with reddish brown speckles). Young are brownish gray in coloring, and lack the yellow head and chestnut shoulder patch of adults. The incubation period is

fourteen to seventeen days, with the fledging period (time necessary for chicks to grow feathers in order to fly) being from seventeen to nineteen days. Females may have up to two broods (young birds that are born and raised together) a year.

Verdins and people: Verdins have no special significance to humans.

Conservation status: Verdins are not threatened; they are common and increasing in numbers within their habitat. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: DK, 2001.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, et al. *Birds of North America*. New York: Houghton Mifflin, 2000.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Stattersfield, Allison J., and David R. Capper, eds. *Threatened Birds of the World: The Official Source for Birds on the IUCN Red List*. Cambridge, U.K.: BirdLife International, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

TITMICE AND CHICKADEES

Paridae

Class: Aves

Order: Passeriformes

Family: Paridae

Number of species: 55 to 58
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Titmice and chickadees are perching songbirds that are small and compact with short, stout bills. The bill's shape can vary depending upon the habitat and the type of food the birds eat. In most species, the bill, legs, and iris (colored part of eye) are dark and dull. However, in a few species the iris is pale yellow. Generally, the birds have brightly colored, soft, thick plumage (feathers), with striking differences in plumage features depending on the species. In fact, many plumage differences occur within species if they have wide areas in which they roam. Females and males are similar in characteristics, with females usually a bit smaller than males. They are well adapted to living in trees, having short, rounded wings and tails, and short but strong legs and feet. Titmice (sometimes shortened to tits) and chickadees have little difference in size within the family. They are 3.9 to 8.0 inches (10.0 to 20.5 centimeters) and weigh between 0.2 and 1.7 ounces (5 and 49 grams).

GEOGRAPHIC RANGE

Titmice and chickadees are located in Europe, Asia, the far north and most parts of central and southern Africa, North America, and Mexico.

HABITAT

Titmice and chickadees are found in all habitats except those in the treeless Arctic zone, South America, the desert areas of Asia and Africa, and Australasia (region consisting of Australia, New Zealand, New Guinea, and the neighboring islands of the

South Pacific). Titmice and chickadees are specifically found in a wide variety of woodland areas from conifers and evergreen broad-leaved woodlands to deciduous broad-leaved woodlands. They are also found in parks, gardens, hedgerows, orchards, vineyards, open woodlands, and scrublands. The birds inhabit a range in altitudes from sea level to 14,764 feet (4,500 meters).

DIET

Titmice and chickadees eat many types of invertebrates (animals without backbones). They also eat seeds, nuts, fruits, and nectar (sweet liquid that flowering plants produce). Most species forage (search for food) in the canopies (uppermost layer of vegetation) of trees and scrubs. Some species forage on the ground. Titmice and chickadees in the northern regions of their habitats regularly store food (mostly insects and seeds).

BEHAVIOR AND REPRODUCTION

All titmice and chickadees are quick and acrobatic in movement, often flying with daring maneuvers. They fly on short, quick flights that may be straight or in a slight up-and-down motion, regularly hopping from branch to branch and often hanging upside down in order to pry food from under tree bark. Some species of titmice and chickadees are able to regulate their nightly body temperature to conserve energy.

Most species live in pairs or small groups during breeding periods, being very territorial. They often join other species' flocks when they are not in breeding periods. Some species display aggressive behaviors when competing for food in flocks. Two such displays are a heads-up posture in species with black chests and crest-raising in crested species. Songs are rare among the birds, but they do make a wide variety of loud and frequent calls.

The birds nest mostly in tree cavities, holes, but also between rocks, in walls, on raised ground, and in artificially made materials such as pipes and nesting boxes. Birds use various soft nesting materials to line their nests. Most species nest between March and July, but others nest year-round or seasonally. Clutch size (group of eggs hatched together) varies between the various groups of titmice and chickadees, but generally ranges from four to ten eggs. Eggs are usually white or blushed pink with some red-brown spotting at the larger end of the egg. The incubation period (time to hatch eggs) is about fourteen

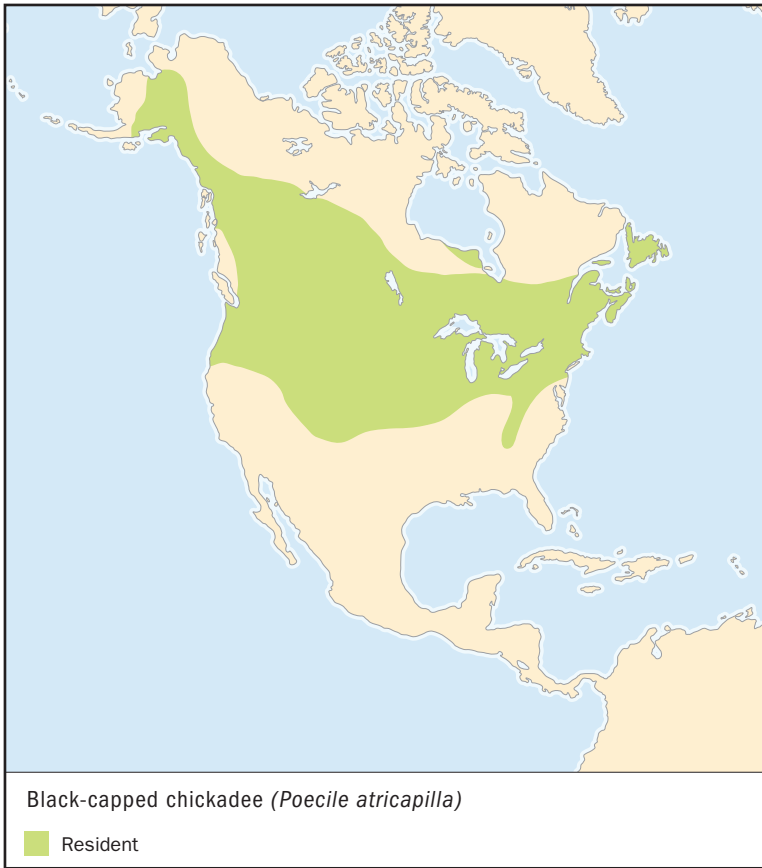
days, and the brood period (time to raise young) is between fourteen and twenty-four days.

TITMICE, CHICKADEES, AND PEOPLE

Titmice and chickadees have no known significance to humans, other than with respect to bird watching. The birds are relatively tame in the presence of humans and will nest in boxes made for them.

CONSERVATION STATUS

Most titmice and chickadees are common in most of their distributions. However, the white-naped tit is listed as Vulnerable, facing a high risk of extinction; while three species (the Palawan tit, the white-fronted tit, and the yellow tit) are listed as Near Threatened, in danger of becoming threatened with extinction.



BLACK-CAPPED CHICKADEE *Poecile atricapilla*

SPECIES ACCOUNTS

Physical characteristics: Black-capped chickadees have white outer tail feathers (longer than other chickadees), light gray on the upper-parts, white under parts, white cheeks, deep brownish buff sides and flanks, rather large, round heads with black caps (patch on top of head) and bibs (chest). They also have strong feet and claws that are blackish gray, as well as short black bills. Males and females are similar in physical features. They are 4.8 to 5.7 inches (12.3 to 14.6 centimeters) long and weigh between 0.3 and 0.5 ounces (10 to 14 grams).

Geographic range: They range throughout the northern part of the United States and throughout the southern parts of Canada, up

to the northwestern part of Canada and the south and central parts of Alaska.

Habitat: Black-capped chickadees are found in deciduous, coniferous, and mixed woodlands, including open areas such as gardens and parks, willow and cottonwood thickets, and small groves of trees and suburban gardens.

Diet: Black-capped chickadees eat a great number of different invertebrates such as insects and their larvae (LAR-vee), caterpillars, spiders, beetles, ants, sawflies, millipedes, snails, and small amphibians (land animals that breed in water), along with wild fruits, seeds (such as of conifers and bayberries), and bark during winter months. They forage throughout the tree canopy, but prefer low branches and rarely go to the ground. They often hold large seeds between their feet on a perch and pound the seed coat open with their beak. They store food in preparation for winter.

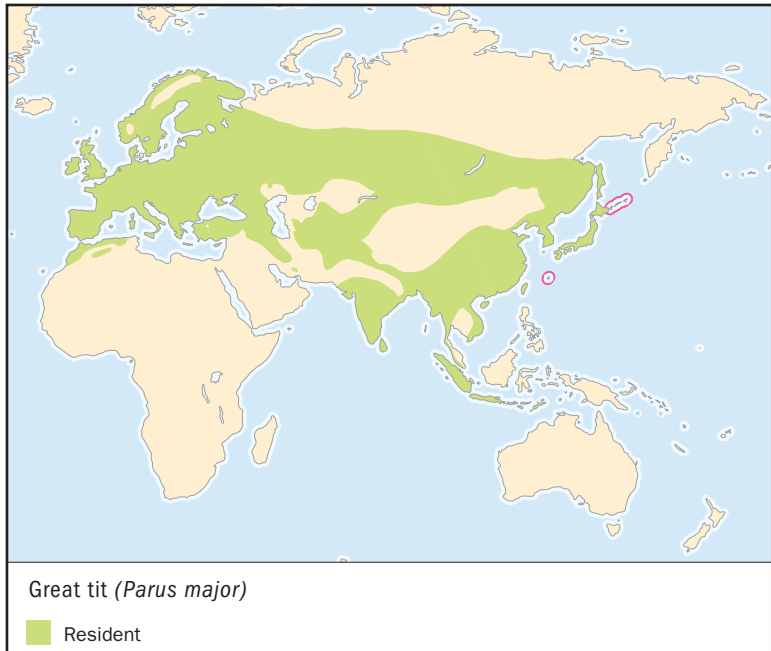
Behavior and reproduction: Black-capped chickadees fly slowly but can be quick-moving around pine cones, twigs, and branches. They

do not generally migrate except for the ones that live in mountainous regions, where they move to lower elevations during colder months. Outside of the breeding season, the birds form groups of several bird species. During breeding season, they are territorial. Their song is a simple, high “fee-bee” with the second note lower than the first, or “fee-bee-be.” They have a variety of calls, including a loud “chick-a-dee-dee-dee.”

The chickadees nest in the cavities of rotted birch or pine trees that are usually 1 to 10 feet (0.3 to 3.0 meters) off the ground, often with both males and females digging their own hole but sometimes using natural holes or abandoned woodpecker holes. Nests are cup-shaped consisting of plant fibers, feathers, and hairs that are set on top of a moss base. Females lay white eggs that are dotted with brown from mid-April to late May (sometimes into July). Usually a single clutch of five to thirteen (but usually six to eight) eggs is laid each year. Incubation period is eleven to thirteen days, and brooding period is from twelve to eighteen days.

Black-capped chickadees and people: Black-capped chickadees are attracted to gardens in which sunflower seeds, peanuts, or suet is available. There is no other special significance to humans.

Conservation status: Black-capped chickadees are not threatened, being common and very widespread with around 0.6 pairs per acre (0.25 pairs per hectare). ■



GREAT TIT

Parus major

Physical characteristics: Great tits are larger than other titmice. They have a yellow underside, with a powerful-looking head and bill. Plumage varies with specific physical location, but generally has a black throat, crown, and vertical breast stripe, white cheeks, green back, blue rump, wings, and tail with a yellow breast. They are about 5.5 inches (14 centimeters) long, and weigh between 0.5 and 0.8 ounces (14 and 22 grams). The sexes look alike, but males are generally larger in size than females.

Geographic range: They range across Eurasia and into Southeast Asia and northern China. The species is generally considered the most widely spread of all the titmice and chickadees.

Habitat: They occur over a wide range of different woodland types, but prefer to live in lowland, broad-leaved deciduous woodlands, especially those with plenty of shrub growth. Great tits stay away from conifer forests. They are also found in open and semi-open woodland areas, including gardens, parks, and cemeteries.



*Great tits often use the same nest from year to year.
(Illustration by Emily Damstra.
Reproduced by permission.)*

Diet: Great tits eat many different types of invertebrates (mostly insects), seeds, nuts, and fruits. They forage within all parts of trees and shrubs, but prefer to be among the leaves. Their strong bill is able to open seeds as large as hazel nuts. They do not store food for the winter.

Behavior and reproduction: Great tits migrate out of mountainous altitudes for the winter months, but otherwise are considered non-migratory. They can sometimes be territorial during the year, but also join flocks of many bird species outside of the breeding season. The loud, repetitive singing of great tits has many variations, especially within males.

Nests, frequently used for several seasons, occur in cavities of trees, walls, and burrows; and sometimes in nest boxes placed by people. The cup-type nest is lined with fine grasses. Females begin to lay eggs in February in southern populations and can continue as late as May in northern populations. Two clutches are often laid each year, with three clutches seldom occurring. Clutch size varies widely from three to eighteen eggs. The incubation period is twelve to fifteen days and only the females incubate the eggs. The fledging period is between sixteen and twenty-two days.

Great tits and people: Some cultural significance exists, especially with Europeans, who maintain close associations with the birds. Great tits are often believed to be the most studied wild bird in the world.

Conservation status: Great tits are very common, but some populations are very small in number. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: DK, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

family CHAPTER

NUTHATCHES AND WALL CREEPERS

Sittidae

Class: Aves

Order: Passeriformes

Family: Sittidae

Number of species: About
27 species

PHYSICAL CHARACTERISTICS

Nuthatches and wall creepers consist of three groups: typical nuthatches, sittellas, and wall creepers. They are small and stocky, large-headed, short-tailed perching birds. Nuthatches are 3.5 to 7.5 inches (8.5 to 19.0 centimeters) long. They have a compact body, large head, short neck, and a thin, chisel-shaped, slightly upturned bill. Their long, pointed wings have ten primary feathers each, they have a short, squared tail, short legs and strong, long toes that have sharp claws. Nuthatches have blue-gray upperparts (blue in some tropical species) and white, pale gray, or reddish brown underparts. The crown on the top of the head is dark and there is a white stripe over the eye.

Sittellas are 4.3 to 4.8 inches (11 to 12 centimeters) long. They have a compact body, large head, thin, chisel-shaped bill and a short tail. They also have a brown-streaked or black body with a red face. Wall creepers are about 6.5 inches (16 centimeters) long. They have a compact body and strong, slightly down-turned bill, a rather long claw on its hind toe and a short tail. Sittellas have brownish upperparts, white underparts (with brown streaks), a white throat, and a brownish yellow patch around the eyes.

GEOGRAPHIC RANGE

Nuthatches and wall creepers are distributed throughout North America, Eurasia, Africa, Southeast Asia, and Australasia (region consisting of Australia, New Zealand, New Guinea, and the neighboring islands of the South Pacific).

phylum

class

subclass

order

monotypic order

suborder

▲ family

HABITAT

They inhabit mostly coniferous, deciduous, and mixed forests and woodlands, while others live in rocky scrublands.

DIET

Nuthatches and wall creepers eat mostly invertebrates (animals without backbones) such as insects, snails, spiders, and other similar animals. They forage (look for food) by climbing up and down on trees while using their bills to pick loose bark away in order to locate their prey on the surface and crevices (narrow cracks) of tree trunks. Nuthatches and wall creepers are the only tree-trunk foraging birds that climb up trees with their head downwards instead of upwards (thus, finding food missed by other birds such as woodpeckers). They climb back down by holding themselves with one foot on the bark while moving with the other, switching feet positions as they zigzag in their path. Foraging on rocks and in epiphytic mosses and lichens (plants that grow on another) also occurs. Arthropods (invertebrate animal with jointed limbs) are sometimes found in foliage from the ground or while in flight. During the winter, they also eat small fruits and seeds. Nuthatches and wall creepers use their bills to crack open seeds by wedging the seed into a small crevice and hitting it with the top of their bill. When food is plentiful, they store it for later use.

BEHAVIOR AND REPRODUCTION

Nuthatches and wall creepers fly in an up-and-down motion. Most birds are not migratory. Adult pairs are monogamous (muh-NAH-guh-mus; having one mate) and occupy a permanent territory throughout their lives. Nests are made in natural cavities in trees or in cavities that were dug out and abandoned by woodpeckers. When previously used nests are used, they will often narrow the opening with mud, dung (solid excrement of animals), and other sticky substances in order to keep predators and competitors out. Some nests are made in rock cavities with substances such as bark flakes and leaves. Many sittellas build open nests in trees rather than using holes. Females lay four to ten white eggs that are flecked with brown or red. Only females sit on the eggs, but both males and females feed the chicks. Most birds produce only one brood each year.

NUTHATCHES, WALL CREEPERS, AND PEOPLE

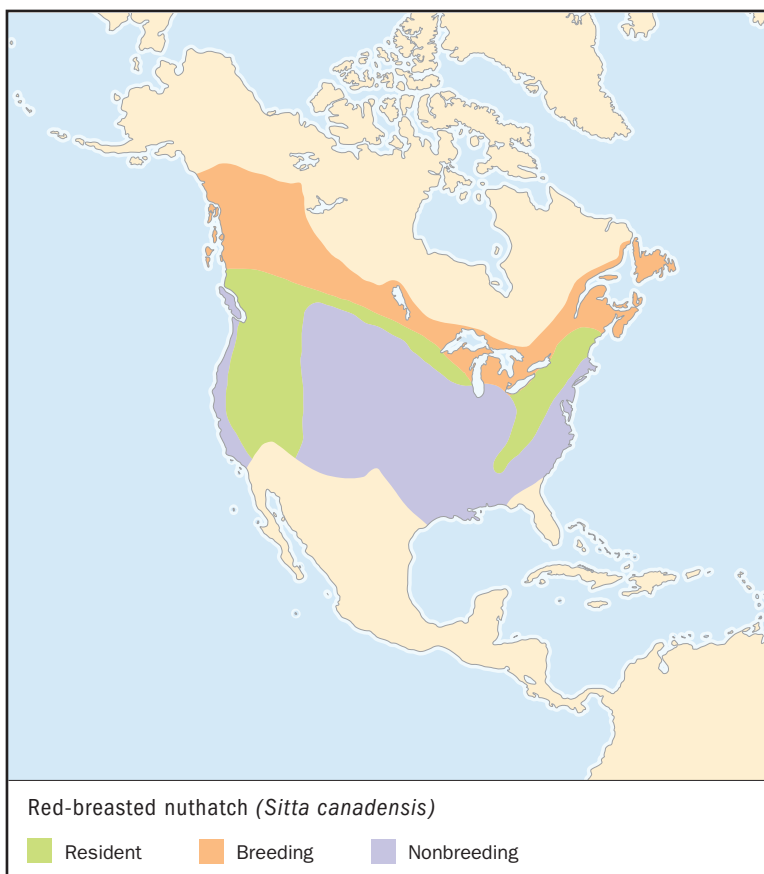
People do not have any direct, significant relationship with nuthatches and wall creepers, other than the enjoyment that

birdwatchers receive from viewing them. They often nest in birdhouses built by people and eat out of provided feeding stations.

CONSERVATION STATUS

Two species in this family are considered Endangered, facing a very high risk of extinction; two species are considered Vulnerable, facing a high risk of extinction; and two species are considered Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



RED-BREASTED NUTHATCH *Sitta canadensis*

Physical characteristics: Male red-breasted nuthatches have blue-gray upperparts (back, shoulders, wings, and rump) with red-brown to buffy orange under parts. They have a black cap and nape (back part of neck), a white throat, a white stripe over the eyes and a black stripe through them. The male nuthatches also have a blue-grey short tail (which shows a white band near the ends). Females are similar to males except for a dark gray crown and nape, and lighter buff under parts that are rustier on the sides of the lower body and the feathers beneath the wings. They are 4.0 to 4.7 inches (10.2 to 11.9 centimeters) long, with wings that are 8.0 to 8.5 inches (20.3 to 21.6 centimeters) wide. They weigh about 0.35 ounces (10 grams).

Geographic range: Red-breasted nuthatches are found throughout southern and northwestern Canada and most of the United States (and found very infrequently in Florida and the southern parts of the Southwest, usually only during the winter months).

Habitat: Red-breasted nuthatches inhabit dense coniferous forests (such as balsam fir and spruce), mixed coniferous-deciduous forests, and along rivers within such forests, moving northward into the high mountains during breeding season. They may also be found in other types of forests, especially during their fall migration.

Diet: They eat invertebrates such as beetles, wasps, caterpillars, insect eggs, and crane flies from tree bark and foliage. In winter, they also eat fruits, nuts, and seeds (especially of pines, spruces, firs, and other conifers). The birds wedge food in tree bark crevices with their bills, and then break off pieces before eating them. They use the head-down movement as they climb trees, as opposed to the normal way of climbing trees head first (head-up).

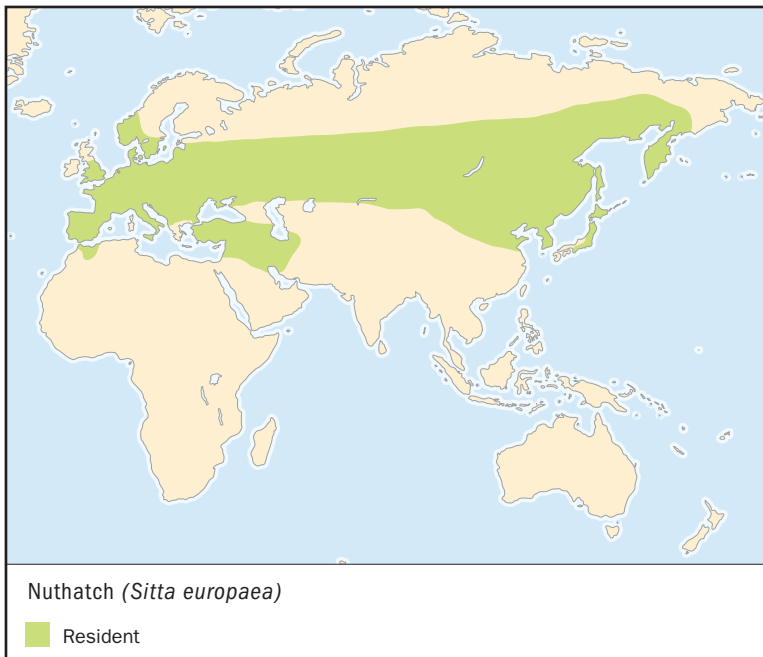
Behavior and reproduction: Red-breasted nuthatches are rather quiet and tame birds. They are normally found as pairs who defend a breeding territory. Considered an irregular migratory bird, they sometimes spend winters in breeding areas when food is plentiful. At other times during the fall, large numbers of the birds move south together and into lowlands, especially when food supplies are low. They produce calls that sound like a nasal “hennk-jemml,” which is quite high-pitched but soft. Other calls include “it-it-it” and “ank-ank-ank.” Their song is a high-pitched “wa-wa-wa-wa-wa” or “eeeen-eeeen-eeeen.”

Males court females by feeding them. The male’s courtship rituals also include turning his back to her, and then lifting his head and tail, raising back feathers and drooping wings, and swaying from side to side. The monogamous breeding pair uses cavities of trees (often pine and cottonwood) for their nests, along with old woodpecker holes and bird boxes. Nests are from 5 to 100 feet (1.5 to 30.5 meters) off the ground but usually 15 feet (4.5 meters). The inside of the nest

is lined with grasses, mosses, rootlets, shredded bark, and plant fibers. Females lay four to seven eggs (which are peppered and spotted with different shades of brown) from April to June. Females sit on the eggs for an incubation period (time of sitting on eggs) of about twelve days, but males join females in feeding of the young. Fledging period (time it takes for the young to grow flying feathers) is eighteen to twenty-one days.

Red-breasted nuthatches and people: Red-breasted nuthatches will often eat out of the hands of people who feed them.

Conservation status: Red-breasted nuthatches are not threatened, being fairly common to common in most of its range. Its eastern breeding range is expanding southward. ■



NUTHATCH

Sitta europaea

Physical characteristics: Nuthatches have blue-gray upperparts, rusty under parts, brown to white undersides, a blue-gray crown, a white throat, and a black line through the eyes with a white line above them. Coloration varies greatly due to the species' very large range. Females and juveniles have a duller head coloring and paler under parts. They are 5.5 inches (14 centimeters) long, with a short tail, and weigh 0.7 to 0.9 ounces (20 to 25 grams).

Geographic range: The birds range widely in temperate Eurasia, from the western coast of the Atlantic Ocean to the eastern coast of the Pacific Ocean. They have the most extensive range of all nuthatches.

Habitat: Nuthatches are located in mature temperate forests, from deciduous to coniferous ones.

Diet: Nuthatches eat invertebrates, such as insects, from tree bark and foliage, especially from branches. They also eat fruits, nuts, and



Pairs of nuthatches live together and defend a territory against other nuthatches. (Illustration by John Megahan. Reproduced by permission.)

seeds during winter months. Nuts are wedged into crevices and then broken open with hits from the bird's bill.

Behavior and reproduction: Nuthatches are often seen running along tree branches or up and down trunks in search of insects. They occur as pairs that defend a breeding territory. The birds do not migrate. During the nonbreeding season, nuthatches are seen in flocks with many different species. Pairs nest in cavities and holes of trees. Nests are cup-shaped and made of bark flakes. The entrance to the nest is often plastered with mud to reduce its size to the width of the female's body, in order to deter enemies. Females sit on the eggs, but both sexes feed the chicks.

Nuthatches and people: People and nuthatches have no known significant relationship.

Conservation status: Nuthatches are not threatened, being common throughout their habitat. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: DK, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Harrison, Colin James Oliver. *Birds of the World*. London, U.K. and New York: Dorling Kindersley, 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.
Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

TREECREEPERS

Certhiidae

Class: Aves

Order: Passeriformes

Family: Certhiidae

Number of species: 7 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Treecreepers are small, mostly brown birds that have long, slightly curved bills, long, slender tails with twelve stiff, pointed feathers, a narrow, teardrop-shaped body, and short legs with long toes and highly curved claws. They possess coloration that allows them to blend into their forest habitat in order to protect themselves from predators, animals that hunt them for food. Plumage (feathers) varies among species. However, upperparts are generally shades of brown with streaks of black, under parts are white or buff with shades of mostly rufous (red-dish) or cinnamon, but sometimes of gray, and a stripe above the eye is buff or white. Males and females are similar in both size and color. In the first year, young birds have duller and streakier looking upperparts than adults, but look more like adults after the first year. Adults are 5 to 6 inches (12 to 15 centimeters) long.

GEOGRAPHIC RANGE

They range widely across the Northern Hemisphere, and in many areas of central and southwest Africa.

HABITAT

Treecreepers inhabit mature pine-oak woodlands and open pine forests. Depending on the species, treecreepers are found anywhere from sea level to mountainous regions and from temperate (mild) to tropical climates.

DIET

Treecreepers eat primarily small insects, spiders, and other small invertebrates. They use their thin bill to explore beneath the tree bark. During the winter, they also eat seeds and nuts, especially when other prey is scarce. Food is not normally stored for future use.

BEHAVIOR AND REPRODUCTION

All treecreepers, except for one species, use their tails to help them climb. Their short legs, long toes, and strong claws help them to cling tightly to the side of trees while foraging (searching for food). They forage singly, in pairs, and in flocks of many different bird species. Foraging rituals consist of flying to the base of a tree and then searching and probing under the bark for insects while climbing the trunk. They also look for food while clinging to the undersides of limbs, creeping outward from the trunk almost to the tip of the main branch. They climb in a jerky, spiral motion. Songs of treecreepers are quiet sounding trills, and calls are high-pitched and thin. Such sounds are used to establish and defend their breeding territory.

Most treecreepers construct nests under loose pieces of bark on dying or dead trees. Once in a while, treecreepers build nests on walls of buildings, in crevices (narrow cracks or openings) of trees, in heavy vegetation such as ivy, and within nesting boxes. Nests are built from 1.5 to 52 feet (0.5 to 16 meters) off the ground, with such a range of heights due to differences in species. Most females lay four to six white and faintly spotted red or reddish brown eggs. Females perform all of the incubation (sitting on eggs) duties, but both males and females feed their young. The brooding period (time to raise young together) is thirteen to seventeen days, with sometimes two broods each year. After the young are old enough to fly off, they will often remain as a family group for two to three weeks.

TREECREEPERS AND PEOPLE

There is no known significant relationship between treecreepers and people.

CONSERVATION STATUS

Treecreepers are not threatened, but some species have seen slight decreases in their populations.

SPECIES ACCOUNT



BROWN CREEPER *Certhia americana*

Physical characteristics: Brown creepers vary in plumage within different populations. They generally have dark brownish upperparts that are spotted and streaked with white, buff, or pale gray, cinnamon rump and undertail coverts (small feathers around base of quill), white to buff under parts, pale eyebrows, and a rusty base on the long tail that contains stiff pointed feathers at the end. There is a bold, buffy band on the wings that is noticeable above and below during flight. Wings are also edged and tipped with buff and white. The bill of the brown creeper is thin and curved, and its claws are sharp. Western populations are relatively small, dark, and long-billed, while eastern populations are slightly larger, paler, and shorter-billed. The isolated

population in Central America is darker and smaller than the northern population. Females and males look alike, and most juveniles look very much like adults. Brown creepers are about 5.25 inches (13.4 centimeters) long, with a wing span of 7 to 8 inches (17.8 to 20.3 centimeters) and a weight of about 0.29 ounces (8.4 grams).

Geographic range: Brown creepers range through North America (western and central Canada and most of the United States) and Central America (south to Nicaragua). Northern populations winter in southeastern United States and northern Mexico.

Habitat: Brown creepers live in mature coniferous, deciduous, mixed (coniferous/deciduous), or swampy forests and woodlands. They are usually located in lowlands.

Diet: Brown creepers forage by flying to the base of a tree. They are adapted for climbing (“creeping”) on tree trunks and large branches in search for food with the use of their stiff tail that is placed against the bark for both support and balance. They also use their strong toes and claws for grabbing onto tree bark. The birds search and probe within bark crevices with their bill for insects while climbing either in a spiraling (like ascending a spiral staircase) or in a somewhat straight path up the trunk and large tree branches. They eat spiders, insects, larvae (LAR-vee), and other invertebrates, along with seeds and nuts. Once reaching the top of the tree, they fly down to the base of the next tree to repeat their foraging technique. Brown creepers are unable to climb head down, which is most likely why they fly from the top of previously foraged trees to the base of its next tree to be searched.

Behavior and reproduction: Brown creepers are usually not seen when observers are looking at trees, because their coloration is so similar to that of the tree bark. To hide from predators, they hold their body against a tree, spread their wings and tail, and remain motionless. They are generally solitary birds, but may join flocks of nuthatches, titmice, warblers, chickadees, and other small birds in the winter (during the nonbreeding season). Brown creepers are unable to move sideways or upside down. Their direct flights are usually of



To hide from predators, brown creepers hold their body against a tree, spread their wings and tail, and remain motionless. Their coloration blends in with the tree bark. (Illustration by Michelle Meneghini. Reproduced by permission.)

short duration, using rapid shallow beats of their wings. Their call is a high, reedy “tseeeee.” Eastern birds have a call that is a very high, thin, quavering “see” or “sreee,” while the western birds’ call is a buzz-like, often doubled “teese.” Their song is a thin, high series of quickly sounding notes “tee see see, teesyew, seee” (but the pattern may vary). For instance, eastern populations may begin singing with two long, high notes followed by an irregular low note “see sooo sideeda sidio,” while the song of western birds generally ends on a high note “see sitsweeda sowit-see.”

Before breeding, they build pocket-shaped nests of bark flakes, plant fibers, twigs, conifer needles, mosses, and silks, which are placed behind loose sheets of bark, in a split-out tree, or behind a heavy growth of ivy. Nests are lined inside with feathers and shredded bark. Monogamous (muh-NAH-guh-mus) partners (having one mate) build nests usually 5 to 50 feet (1.5 to 15 meters) above the ground. The nest is built away from other nests and birds. Females lay four to eight eggs, which are lightly flecked with reddish brown. The incubation period is thirteen to seventeen days, which is performed only by the female. The nestling period (time period necessary to take care of young before ready to fly off) is thirteen to sixteen days. Both parents feed the young birds, with only one brood per year.

Brown creepers and people: People enjoy putting out a mixture of nuts, peanut butter, suet, and cornmeal in feeders for brown creepers and watching them feed.

Conservation status: It is believed that brown creepers are declining in numbers, but so far they are not threatened. Their nesting areas are declining due to the cutting down of forest habitats. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: DK, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

PHILIPPINE CREEPERS

Rhabdornithidae

Class: Aves

Order: Passeriformes

Family: Rhabdornithidae

Number of species: 3 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Philippine creepers are a small group of medium-sized, very similar looking, arboreal (living in trees) birds found only in the Republic of the Philippines. They are similar in physical appearances to treecreepers. The perching birds have long, slender bills and brush-tipped tongues. The bird group consists of three species, the greater rhabdornis, the stripe-breasted rhabdornis, and the stripe-headed rhabdornis.

As a group, Philippine creepers are very similar in size and color. However, there is little known about the specific details of the family's size and color. Philippine creepers are marked and shaded with black, brown, red-browns, gray, and white; colors that help them to blend into the forests in which they live. The birds have dark brown streaks on their upperparts, white on the under parts and flanks (with blackish streaks), and lighter streaks on the other parts of their body. They have a long, slender, pointed, down-curved bill and brush-like tongue. Philippine creepers are 6 to 7 inches (15 to 17 centimeters) long and weigh between 3 and 4 ounces (80 to 95 grams).

GEOGRAPHIC RANGE

Philippine creepers are limited to the range of the major Philippine Islands of Luzon, Samar, Leyte, Mindanao, Negros, and Panay and of the minor islands of Catanduanes, Masbate, Calicoan, Dinagat, Basilan, and Bohol.

HABITAT

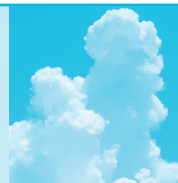
Philippine creepers inhabit deep, dense, tropical primary and secondary lowland and mountainous forests, along with the edges of forests. They specifically prefer the upper levels, including the canopy (uppermost level of vegetation of the forest) and the crown (top part of the forest) of trees and the middle story (middle part) of the forest.

DIET

Philippine creepers run across the tops of tree branches, hop and jump between branches on trees, and crawl on tree bark found on the trunks and main limbs of trees during their foraging for food within the forest. They search on the bark of tree trunks and branches and even among flowers. Philippine creepers eat mostly insects, but also nectar (sweet liquid produced by flowering plants), fruits, and seeds. Their long, slender bill allows them to easily remove insects from bark, while their brush-tipped tongue enables them to quickly feed on nectar.

BEHAVIOR AND REPRODUCTION

In most of the recent past, these birds have been grouped with the northern creepers (family Certhidae), which is why they are often called Philippine creepers. Although they are called “creepers,” their behavior is not very creeper-like. In fact, they act more like chickadees and titmice while in flocks of mixed species of birds. Philippine creepers are diurnal (active during the day) and arboreal (living in trees). They do not migrate (move between habitats) other than with regards to local movements in their permanent territory. They are very social birds, often found foraging with a flock of birds both within and outside of their family. Other specific behaviors with other birds are not known for certain due to a lack of adequate study and research. Their songs and calls are also unknown. At dusk, groups of the birds roost in the upper branches of trees. Little information is known about the reproduction activities of Philippine creepers. It is known that they nest in tree crevasses (cracks), but it is unknown what



PHILIPPINE HABITAT DESTRUCTION

About 572 species of birds, including the Philippine creepers, are known to occur within the 7,100 islands that comprise the country of the Republic of the Philippines. Scientists believe that of these 572 species, about 172 bird species are not found in any other place on Earth. Many of these unique birds, however, are endangered as the result of high levels of habitat destruction in the Philippine forests. Their continued existence will depend in part on how successful conservation and protection measures will be in the future.

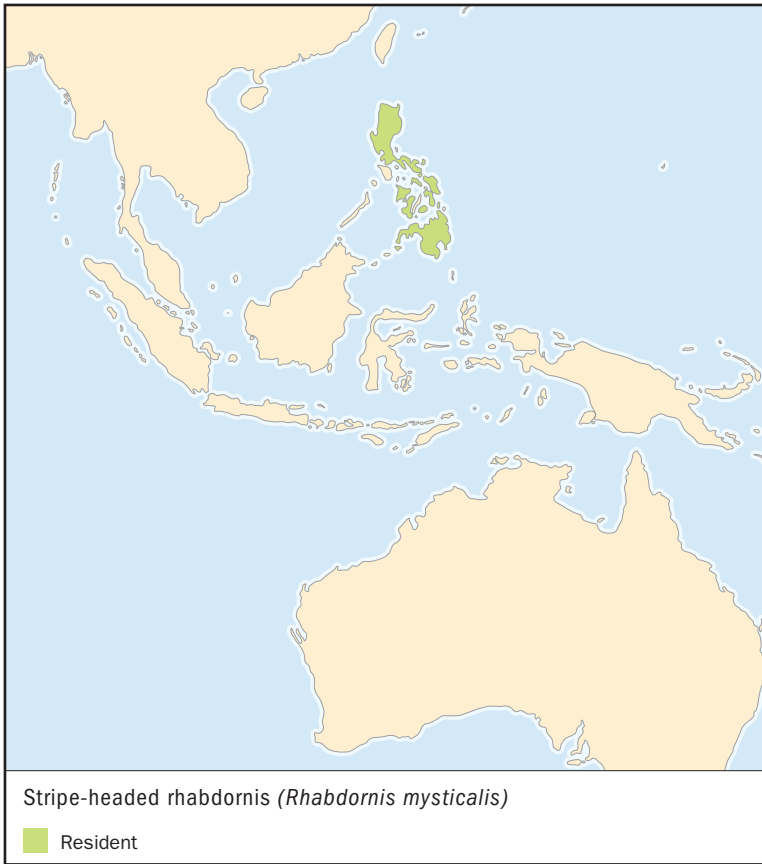
type of nesting material is used inside the nest. Also unknown is specific information about the number and coloring of eggs laid by the birds. Breeding probably begins in March but may occur at other times during the year.

PHILIPPINE CREEPERS AND PEOPLE

Philippine creepers have no special significance to people.

CONSERVATION STATUS

Philippine creepers are not threatened. The stripe-breasted rhabdornis and the stripe-headed rhabdornis are common throughout their ranges, while the greater rhabdornis is relatively rare and confined to the mountainous regions in Luzon (within the Philippines). As the native forests of the Philippines are increasingly destroyed, the size of their habitat (home environment and territory) is being decreased and the condition of their habitat is being severely degraded. Because of this, Philippine creepers have a weakened ability to grow in numbers.



STRIPE-HEADED RHABDORNIS

Rhabdornis mysticalis

SPECIES ACCOUNT

Physical characteristics: Stripe-headed rhabdornises (sometimes called the stripe-sided rhabdornises) are 5.7 to 6.2 inches (14.5 to 15.8 centimeters) long, and weigh between 2.75 and 3.00 ounces (78 to 85 grams). Both sexes are colored in a similar way, but males are larger in size than females. Generally, stripe-headed rhabdornises have black bills, dark brown eyes, and dark legs. Adult males have a blackish brown crown (top part of the head) and nape (back part of the neck) with many white streaks, a broad strip through the eye, while the face and the rest of the neck are blackish brown. Adult females differ from males in having a lighter brown crown and face. Both sexes have a striated head (marked with narrow parallel bands).

*Stripe-headed rhabdornises are active during the day, and often flock together in groups of up to twenty-five individuals.
(Illustration by John Megahan.
Reproduced by permission.)*



Geographic range: Stripe-headed rhabdornises range in the Philippine Islands of Luzon, Negros, Panay, Masbate, Contanduenes, Leyte, Mindanao, Samar, Basilan, Bohol, Calicoan, and Dinagat.

Habitat: Stripe-headed rhabdornises live throughout the major Philippine Islands in tropical forests from sea level up to an elevation of about 3,900 feet (1,200 meters). They generally prefer lowland forests and second growth forests, and are usually found within the canopy or middle story of the trees.

Diet: Stripe-headed rhabdornises primarily eat insects, along with nectar, fruits, and seeds found within their forest habitat. Stripe-headed rhabdornises forage (search for food) along limbs, checking crevices with their thin pointed, down-curved bills in order to remove insects from tree bark. They then use their brush-tipped tongues for the removal of nectar within flowers.

Behavior and reproduction: Stripe-headed rhabdornises are very active during the day. They occupy the canopy and middle story of primary forests, forest edges, and secondary growth. Groups of the birds themselves or groups of the birds along with other bird species often flock together in numbers up to twenty-five individuals. At dusk, they usually roost in large groups of up to several hundreds of birds. The call of the stripe-headed rhabdornises is an uninteresting, high-pitched “tsee tsee WICK tsee,” with the “tsee” called out softly but

the “WICK” spoken sharp and loud. The reproduction habits of the birds are largely unknown. They are believed to nest in cavities (hollow areas) and holes of trees.

Stripe-headed rhabdornises and people: Stripe-headed rhabdornises have no special significance to people.

Conservation status: Stripe-headed rhabdornises are not threatened. They are commonly found throughout a restricted range of the Philippine islands. However, as the native forests of the Philippines decrease due to increased and continuing activities of humans, the size and condition of the habitat of the birds is being negatively affected. Stripe-headed rhabdornises, thus, are less able to adequately cope with their changing environment. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

Birdwatch.ph. The Official Website of the Wild Bird Club of the Philippines. <http://www.birdwatch.ph/gallery/stripeheadedrhabdornis.html> (accessed on April 19, 2004).

FLOWERPECKERS

Dicaeidae

Class: Aves

Order: Passeriformes

Family: Dicaeidae

Number of species: 52 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Flowerpeckers consist of the true flowerpeckers and the berrypeckers. Some researchers consider only the true flowerpeckers as members of the family Dicaeidae, with the berrypeckers sometimes in dispute among scientists as to their membership in the family.

All six groups of birds are very small, dumpy-looking, often brightly colored with short, usually straight bills and short stubby tails. Upperparts are dark and glossy, and under parts are lighter. In species with dull plumage (feathers), no difference between males and females occurs. In those species with bright plumage, males have patches of bright colors; those patches are missing in females. In some species, females appear duller and larger than males. They are 2.2 to 8.3 inches (5.6 to 21.0 centimeters) long and weigh between 0.14 and 2.80 ounces (4 to 80 grams).

True flowerpeckers are small birds with short bills and short, stubby tails. The outer third of the upper bill is serrated (having notches). Their tongues have frilly outer edges, termed fimbriations.

Berrypeckers have simple tongues, long, straight bills, and lack specializations of the gut (abdomen) that are contained in true flowerpeckers.

GEOGRAPHIC RANGE

Flowerpeckers and berrypeckers are found on the Indian subcontinent, Sri Lanka, Myanmar, Thailand, Vietnam, Cambodia,

Laos, southern China, Hainan Island, Taiwan, the Malay Peninsula, Indonesia, the Philippines, Sulawesi, the Moluccas, New Guinea and its surrounding islands, and Australia.

HABITAT

Flowerpeckers reside in tall forests, from sea level up to more than 12,000 feet (3,700 meters) in altitude where little vegetation grows. The birds range from rainforests, secondary growth forests, and woodlands to cultivated farmlands and urban areas.

DIET

Food for flowerpeckers consists mostly of berries from shrubs, trees, and vines (especially mistletoe berries); fruits; nectar; and pollen; but also small insects and spiders. The birds do a funny-looking dance while trying to separate the fleshy part of the mistletoe berries from their large seeds. Smaller fruits are eaten whole, while insects and spiders are caught as they fly through the air.

BEHAVIOR AND REPRODUCTION

Flowerpeckers easily twist and turn while roaming among foliage. They actively move their wings and sharply call out while feeding. The birds are territorial, with males chasing intruders in weaving flight over their territory. The birds are usually found singly, in pairs, or small groups, but sometimes join with different types of birds. They often sit quietly on perches for long periods of time. When vocal, they give out simple, faint metallic chirps and clicks, and high-pitched twittering. Some species produce a series of rapid back-and-forth notes.

Reproduction behavior of flowerpeckers is not known very well. Courtship rituals include flitting around females, calling out to them, and fanning their tails. They generally nest in pairs. The description of eggs is still unknown in some species. Males and females share duties on the construction of nests, incubation (process of sitting on eggs before hatching) of eggs, and feeding of the young. Open nests are hung from thick bushes, shrubs, or trees, and are made in the shape of a cup or pendant with a narrow side entrance near the top. Nest materials



PECKING AT FLOWERS

Flowerpeckers are named for their tendency to peck at flowers with their bills for nectar, seeds, and small insects. One species of flowerpecker native to Australia is the mistletoebird, which pecks on mistletoe berries. Within a half an hour after eating the berry, it is excreted. Because mistletoe is considered a parasitic plant on trees, the mistletoe bird is sometimes considered a pest.

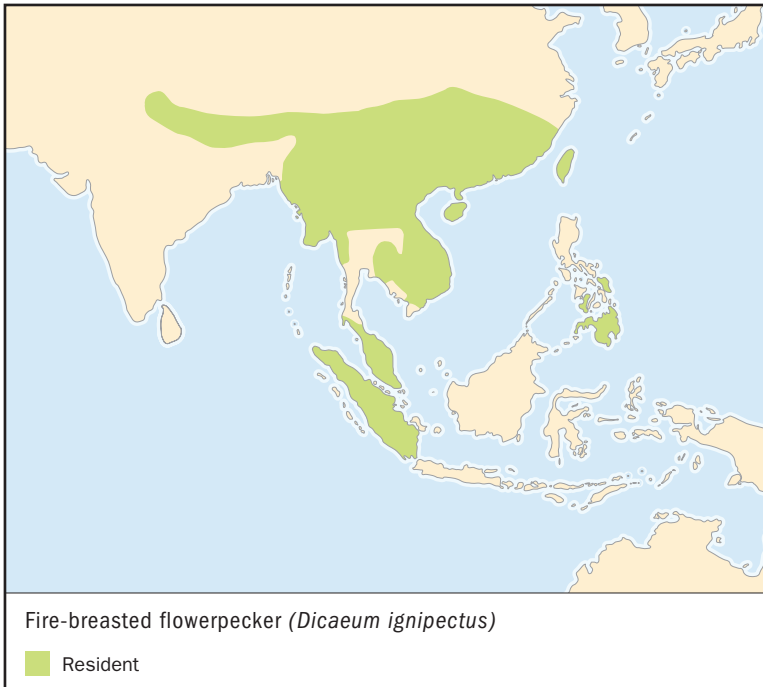
consist of vegetable material, dried flowers, lichen, feathers, grass, or small roots, all of which are held together with cobwebs and lined with vegetable down. Some nests are decorated with insect waste matter or other debris. Most eggs are white, but a few species lay spotted ones. The female lays usually two eggs, but one to four eggs are possible. The incubation period is about 15 days, and the nestling period (time necessary to take care of young birds unable to leave nest) is also about 15 days.

FLOWERPECKERS AND PEOPLE

People consider some species to be pests because they deposit seeds of mistletoe, which is a parasite (organism living on another) on trees that are used in the lumber industry and for other economic purposes. The crested berrypecker is often caught for food in the highlands of New Guinea.

CONSERVATION STATUS

The Cebu flowerpecker is Critically Endangered, facing an extremely high risk of extinction, with a population of less than fifty birds. The black-belted or Visayan flowerpecker and the scarlet-collared flowerpecker are both Vulnerable, facing a high risk of extinction. Five other species are Near Threatened, in danger of becoming threatened with extinction.



FIRE-BREASTED FLOWERPECKER

Dicaeum ignipectus

Physical characteristics: Fire-breasted flowerpeckers have a black crown (top part of the head); black upperparts with dark brown cheeks, a scarlet breast, and buff belly and throat. They are about 3.5 inches (8.9 centimeters) long, and weigh between 0.14 and 0.28 ounces (4 and 8 grams).

Geographic range: Fire-breasted flowerpeckers range throughout most of Southeast Asia including Mindanao, Negros, and Samar (within the Philippines), Sumatra (within Indonesia), Cambodia, northeast and southeast Thailand, Taiwan, Kashmir, northeast India, Nepal, Bhutan, Sikkim, northern Myanmar, northern Indochina, southern China, and southeast Tibet.

Habitat: These birds live in mountainous forests, oak woodlands, and cultivated lands. They also live near rhododendrons (an ornamental evergreen shrub of the heath family).

SPECIES ACCOUNTS



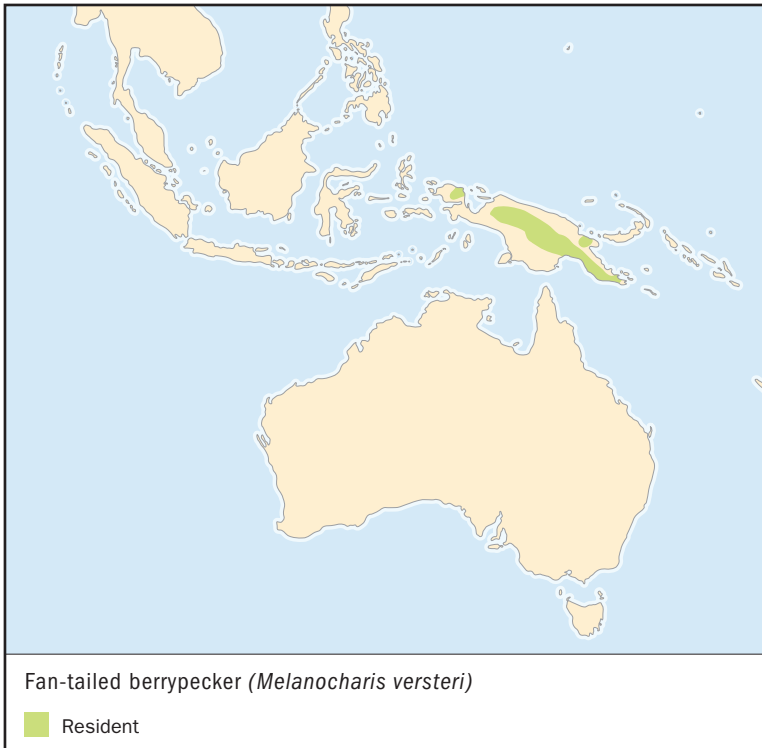
Fire-breasted flowerpeckers are very active birds, and join other birds within their species and other bird species during the nonbreeding season. (Illustration by Bruce Worden. Reproduced by permission.)

Diet: Nectar, fruits, mistletoe berries, insects, and spiders are eaten by fire-breasted flowerpeckers.

Behavior and reproduction: Fire-breasted flowerpeckers are very active birds, especially around treetops. They join other birds within their species and other bird species during the nonbreeding season.

Fire-breasted flowerpeckers and people: People and fire-breasted flowerpeckers have no especially significant relationship.

Conservation status: Fire-breasted flowerpeckers are not threatened. ■



FAN-TAILED BERRYPECKER

Melanocharis versteri

Physical characteristics: Fan-tailed berrypeckers have whitish underparts and side feathers on a very long tail. The white tail patches are very noticeable while they fly. They are 5.5 to 6.0 inches (14 to 19 centimeters) long. Females are larger and heavier than males, with a wing length of 2.6 to 2.8 inches (6.6 to 7.1 centimeters) and a weight of between 0.56 and 0.70 ounces (16 and 20 grams). Males have a wing length of 2.32 to 2.52 inches (5.9 to 6.4 centimeters) and a weight of between 0.44 and 0.53 ounces (12.5 and 15.0 grams).

Geographic range: Fan-tailed berrypeckers are found in the mountains of New Guinea; both in Indonesia and Papua New Guinea. The birds are usually found in lands that lie 4,500 to 10,800 feet (1,400 to 3,300 meters) in altitude.

Habitat: Fan-tailed berrypeckers occupy mountainous forests, tree-fern heaths (grassy and shrubby uncultivated land), and alpine thickets. They generally prefer undergrowth but sometimes are found in the middle strata of forests.

Diet: Small berries and insects are usually eaten by fan-tailed berrypeckers. Berries and insects are taken from the undergrowth and eaten whole. The bird often hovers to pluck berries or to take insects from the foliage.

Behavior and reproduction: Fan-tailed berrypeckers are shy birds, usually found singly or in pairs. They are active feeders. While flying in an acrobatic (with daring maneuvers) manner, they show white coloring in the tail. They have a harsh song and their calls are often heard in squeaks and nasal scold-like tones.

Nests are built much larger than necessary for the size of the birds. A neat, sturdy, and deep cup is constructed that is usually 3 inches (8 centimeters) in diameter and about 4 inches (10 centimeter) high. Nests are made of fibers torn from ferns, lined with lichens, and

usually placed in the fork of a tree or on a horizontal branch. Fan-tailed berrypeckers build the nests so predators cannot easily find them.

Fan-tailed berrypeckers and people: People and fan-tailed berrypeckers have no known significant relationship.

Conservation status: Fan-tailed berrypeckers are not threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, et al, eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

PARDALOTES

Pardalotidae

Class: Aves

Order: Passeriformes

Family: Pardalotidae

Number of species: 8 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Pardalotes (PAR-dah-lohts) are small- to medium-sized birds, with some species being very small in size. They are fairly bright colored, beautiful birds. Pardalotes have a short and plump body; a short, stumpy, scoop-shaped black bill; a short tail; nine long, stiff primary feathers (with a tenth feather barely visible), nine secondary feathers (with some species having a tenth shortened one); short pointed wings; and strong legs and feet. All species have brightly colored plumage (feathers), with many combinations including yellow, brown, and black colorings and white spots or streaking. The color combination is often called “sparkling,” which has given them the popular name “diamond bird.” Their backs are slate to olive, while the head and wings are black with white spots or stripes and with patches of bright yellow or orange. Females are duller in color than males in some species. They are 3 to 5 inches (8 to 12 centimeters) long, and weigh between 0.3 and 0.5 ounces (8 to 13 grams).

GEOGRAPHIC RANGE

Pardalotes are found only on the continent of Australia.

HABITAT

Pardalotes inhabit areas of woodlands and forests, mostly living alongside eucalyptus (yoo-kah-LIP-tus; tall, aromatic trees) and acacia (uh-KAY-shah; flowering trees). They range from the wet coasts to the arid interior of the continent, missing only from certain small areas of the southern desert.

DIET

The diet of pardalotes consists of a wide variety of small, soft-bodied invertebrates (animals without a backbone), including small wasps, spiders, weevils (a destructive beetle with a snout), and termites. They also eat lerps (sugary lumps of secretions made by a particular insect). Pardalotes move quickly around the outer parts of foliage in search of prey from leaves and twigs, which they pick up with their scoop-shaped bills. They frequently hang upside down when foraging. They are not restricted to tree trunks or cones in their foraging, but roam throughout the foliage.

BEHAVIOR AND REPRODUCTION

Pardalotes spend most of their time high in the outer foliage of trees, feeding mostly on lerps, as well as insects and spiders. Their feeding on lerp infestations in eucalyptus forests is significant to maintaining the health of the forest ecosystem. They nest in pairs, only combining in groups during winters, migrations, and after breeding periods. They sometimes come together into flocks after the breeding season. Several species are migratory and make large seasonal movements. They often forage in flocks of several species during the winter. When feeding, they make clicking sounds from their bills while removing lerps from the foliage.

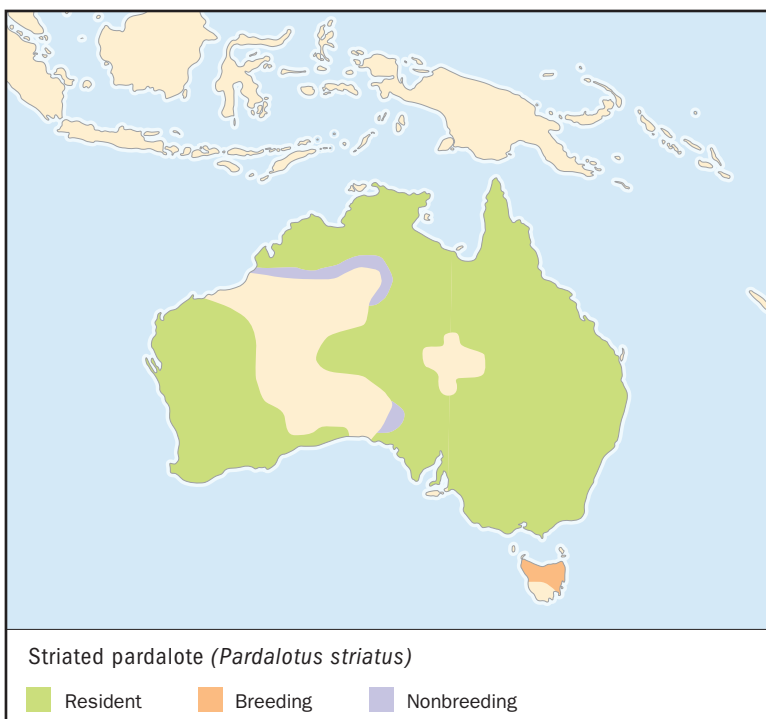
Female and male partners defend their nesting territories with two- to five-note whistles that are also repeated over and over again. Breeding partners mate for life (that is, they are monogamous [muh-NAH-guh-mus]). Nests are built in shapes of cups, sometimes with domes on top. Nests are usually built in hollows or burrows. Deep horizontal tunnels that lead to the nests are burrowed into earthen banks or horizontally into the ground, and are usually dug 16 to 28 inches (40 to 70 centimeters) long. At other times, nests are made in tree hollows. The external size of the nest is usually no bigger than a mouse hole, but the tunnel can be up to 3 feet (1 meter) in length. The nests are made with various plant fibers. Females lay three to five eggs that are 0.6 by 0.5 inches to 0.7 by 0.6 inches (1.6 by 1.3 centimeters to 1.9 by 1.5 centimeters). The incubation period (time necessary to sit on eggs before hatching) is fourteen to sixteen days, while the nestling period (time necessary to take care of young birds unable to leave the nest) is about twenty-five days.

PARDOLOTES AND PEOPLE

People and pardolotes have no special relationship between them.

CONSERVATION STATUS

The forty-spotted pardalote is Endangered, facing a very high risk of extinction. The species has been studied in great detail with regards to a detailed plan to increase its numbers that are confined to southeastern Tasmania. Other species of pardolotes are widely spread around and are not considered threatened. Their primary threats are from land clearing, overgrazing, and degradation and fragmentation of habitat.



STRIATED PARDALOTE

Pardalotus striatus

SPECIES ACCOUNT

Physical characteristics: Striated pardalotes are the largest of the pardalotes. They are small, brightly colored birds that are easily identified by the bright yellow patch above the eyes. They have considerable variation in plumage characteristics across the geographical range of their species. All birds have white eyebrows, olive-gray backs, and a white stripe on the wings. In different parts of the country, the wing stripe may be narrower or wider, the colored spot at the front end of this stripe may be red or yellow, and the black crown (top part of the head) may have narrow white stripes. Both male and female are similar in plumage. They are 3.5 to 4.5 inches (9.0 to 11.5 centimeters) long and weigh about 0.42 ounces (12 grams). Females and males are similar in plumage, but juveniles are much paler, particularly on the crown and face.

Geographic range: Striated pardalotes are located throughout Australia except for desert sections of the interior of the country. Like

other species of pardalotes, they are found only in Australia.

Habitat: Striated pardalotes are found in almost every territorial habitat that contains trees or shrubs. They are widely distributed through woodlands and forests filled with eucalyptus, but are also found in rainforests and mangroves (tropical evergreen trees of tidal coasts). They often are found near and about water courses.

Diet: Striated pardalotes eat a number of invertebrates, including insects (and their larvae [LAR-vee; active immature insects]) that they pick from the surfaces of foliage in the tops of trees, such as outer twigs and leaves, mostly from eucalyptus and acacia trees. They sometimes come close to the ground and feed among low shrubs. Feeding

takes place in small groups, with the birds maintaining contact with each other with soft sounding trills.

Behavior and reproduction: Striated pardalotes are very active and curious in their overall behavior. They form flocks of birds during winter. Some species are nomadic or migratory, while others tend to be sedentary (tending not to migrate). They do not defend their breeding territory, except for the immediate area surrounding the nest. They are loud sounding birds with a repetitious two- to three-note call, such as the “tchip tchip.” When not breeding, the birds form flocks that feed together. While feeding they utter constant, short calls.

The breeding season takes place between the months of June and January. They form breeding pairs or small groups of up to six birds. Striated pardalotes build nests close to the ground, often in earthen burrows, or in tree hollows or tunnels. They sometimes use artificial objects built by people for their nests. The completed nests are cup-shaped, either partially or completely domed. They are made with plant fibers, such as tree bark and grass, and lined with finer materials. Nests are located at the end of a tunnel, or in a tree hollow. The birds appear regularly at the entrance to the nest, aggressively guarding the area around the nest from other pardalotes and predators. Females usually lay three to five white eggs, which are incubated by both the male and female of breeding pair. Other members of the breeding group also help with feeding the young.

Striated pardalotes and people: People and striated pardalotes have no special relationship between them.

Conservation status: Striated pardalotes are not threatened, being plentiful in a broad range of environments and across a wide geographic area. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Pizzey, Graham. *Field Guide to the Birds of Australia*. Sydney, Australia: Angus and Robertson, 1997.

SUNBIRDS

Nectariniidae

Class: Aves

Order: Passeriformes

Family: Nectariniidae

Number of species: About 124
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Sunbirds are very small birds, 3 to 7 inches (8 to 16 centimeters) long, resembling New World hummingbirds. The males of most sunbird species are brilliantly colored with combinations of iridescent, metallic green, purple, blue and black along with spots and patches of yellow, orange and red. Males of a few species are more drab, as are the females of nearly all sunbird species, although females of some species bear a metallic sheen. Outside of the breeding season, males molt and revert to less gaudy plumage (feathers) resembling that of the female of the species.

Sunbirds can easily be mistaken for the New World hummingbirds, but the sunbirds are strictly Old World birds and are not in any way related to hummingbirds. Sunbirds and hummingbirds are vivid examples of convergence, through adaptive evolution, by which unrelated species come to resemble each other due to similar environmental pressures over long stretches of time. In the case of sunbirds and hummingbirds, feeding on nectar has been the major adaptive molding factor in the two families.

Many single species are confined to some small islands off Africa, India, or in Indonesia. Examples include the Seychelles sunbird, found only on the Seychelles Islands, and the São Tomé sunbird, found on São Tomé.

Sunbirds in the genus *Nectarinia* have long, thin, downcurved bills for reaching into flowers to sip nectar, much like the bills

of hummingbirds and other nectar-feeding bird species among the asity-sunbirds (family Philepittidae) and Hawaiian honeycreepers. Species in genus *Anthreptes*, considered the most primitive of the genera, have short, straight bills and chiefly feed by gleaning (plucking) insects from leaves, although they add nectar and fruits to their diets. Species of the genus *Aethopyga* have short bills and are among the most brilliantly colored animals alive. Species of genus *Arachnothera*, the spiderhunters, have low-key green, yellow, and gray plumage and most have very long, downcurved bills.

GEOGRAPHIC RANGE

Sunbirds live in tropical Africa, Madagascar, tropical Southeast Asia, Indonesia, Philippine Islands, Australia, and New Guinea.

HABITAT

Sunbirds can be found in lowland and mountain tropical rainforest, savanna with open woodlands, gallery forests (along rivers in dry country), thornscrub, and mangrove.

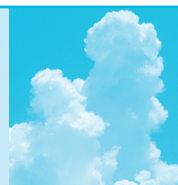
DIET

Sunbirds eat mostly nectar but also fruit, insects, spiders and related creatures.

BEHAVIOR AND REPRODUCTION

Sunbirds are active, energetic creatures. Individuals may forage alone, in monogamous (muh-NAH-guh-mus) pairs (with just one mate), or in groups. Some species, among them the olive sunbird, collared sunbird, and Bates' sunbird, forage in groups in the canopies of dense primary tropical forest.

The most common sort of nest built by sunbirds is oval, purse-like, and hung from a small tree branch. Sunbirds form monogamous pairs to mate and breed. The female constructs the nest and incubates the eggs, while both sexes care for the chicks. The female lays two or three eggs.



SPIDERHUNTERS

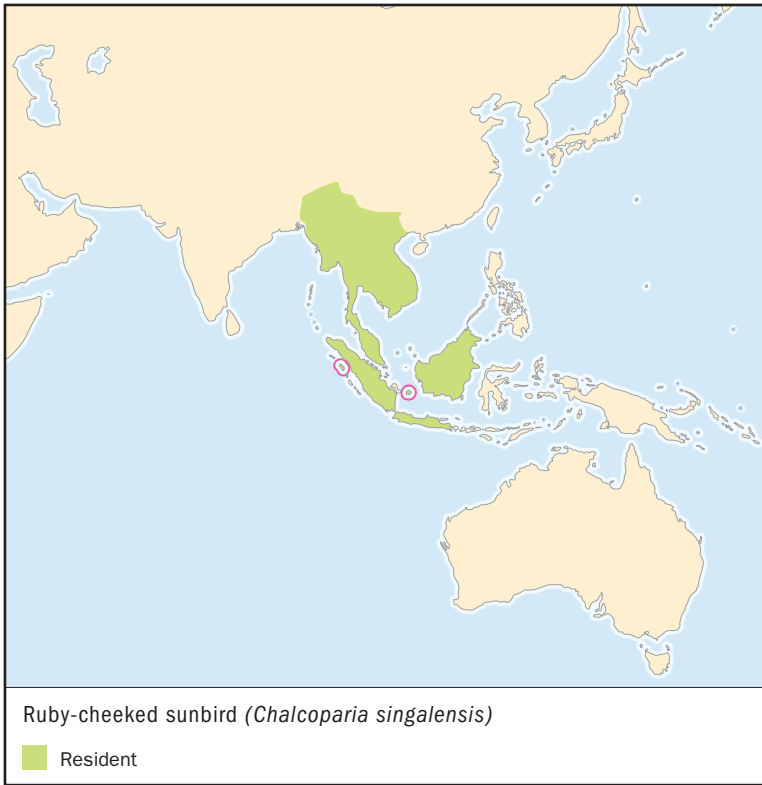
The ten species of spiderhunters are an obscure, little-studied group of small, mostly arboreal birds scattered through the tropical forests of Southeast Asia and some of the Indonesian islands. They feed on spiders and insects. Beaks of all the spiderhunters are thin and downcurved, more or less like those of sunbirds, but more robust. The beak of the gray-breasted spiderhunter is so long and robust that it borders on the grotesque.

SUNBIRDS AND PEOPLE

Sunbirds are not harmful to humankind in any way. They are a delight wherever they live, and a tourist draw for bird-watchers and people interested in exotic things.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists two species of sunbird as Endangered, facing a very high risk of extinction; four as Vulnerable, facing a high risk of extinction; and eight as Near Threatened, in danger of becoming threatened with extinction.



RUBY-CHEEKED SUNBIRD

Chalcoparia singalensis

SPECIES ACCOUNTS

Physical characteristics: The adult body length is around 3.9 to 4.3 inches (10 to 11 centimeters). The bill is short and not down-curved. The male is iridescent green above, yellow below, with vivid crimson patches on the cheeks. Females and young are duller but the female shares the male's orange throat.

Geographic range: Northern India to northern Indochina, Sumatra, Java, and Borneo.

Habitat: Lowland and mountain tropical rain forest; also open forest, scrub forest, gardens.

Diet: Ruby-cheeked sunbirds feed on nectar and insects.

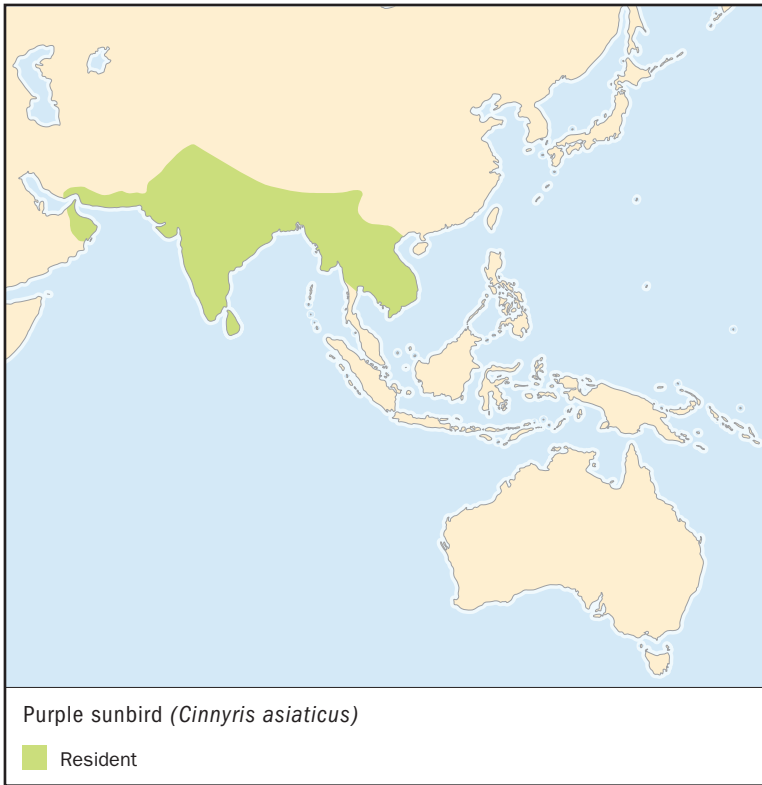


Ruby-cheeked sunbirds forage in tropical forests and sometimes gardens, usually in groups of five to ten. (Illustration by Barbara Duperron. Reproduced by permission.)

Behavior and reproduction: Ruby-cheeked sunbirds forage in tropical forests, in the canopy and at mid-level, usually in groups of five to ten. They also visit gardens for foraging. The call is a loud “chirp.” Breeding follows the usual pattern among sunbirds: monogamous breeding pairs, purse-like nests, female incubating eggs, and both parents caring for the chicks.

Ruby-cheeked sunbirds and people: There is little significant interaction between ruby-cheeked sunbirds and humans, other than human appreciation of the exotic beauty of this and other sunbird species.

Conservation status: This species is not threatened. ■



PURPLE SUNBIRD

Cinnyris asiaticus

Physical characteristics: Adult body length is 3.9 inches (10 centimeters). Males are dark, glossy bluish purple above, with yellowish underparts. The female is less colorful, with a yellow and gray upper body, but has yellow underparts much like the male's. The beak is thin and downcurved and the tongues are tubular with brushy tips (of flesh), because of their adaptation to a diet of mainly nectar.

Geographic range: These birds live from Pakistan through India to Southeast Asia. This is the most common sunbird species in India.

Habitat: Purple sunbirds live in forests, often visiting gardens.

Diet: These sunbirds eat nectar and insects.

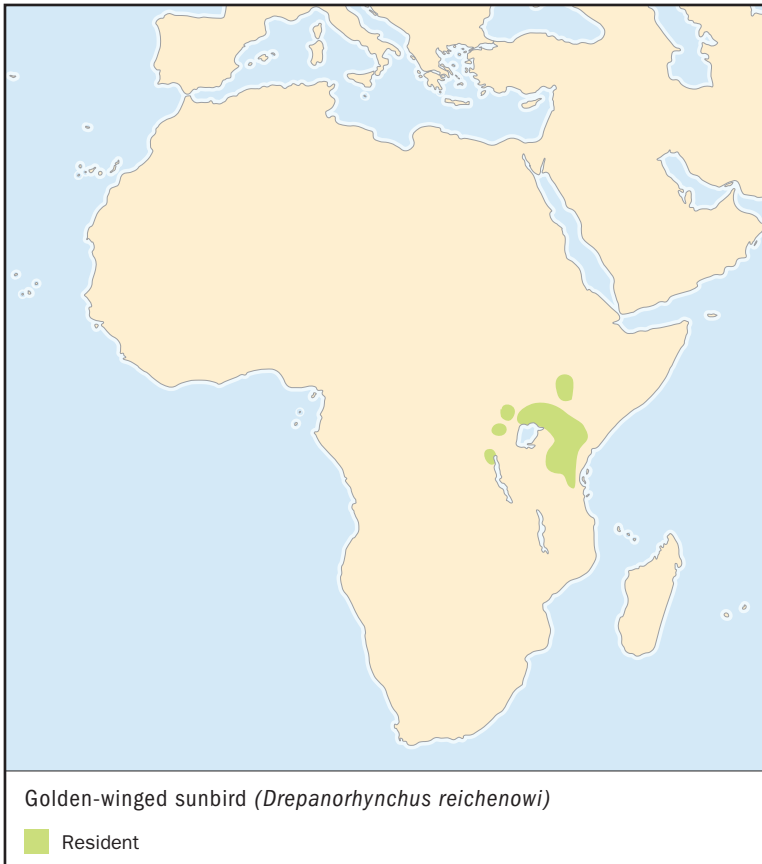


Purple sunbirds forage for nectar and insects in forests and often visit gardens specifically to seek out nectar. (Illustration by Barbara Duperron. Reproduced by permission.)

Behavior and reproduction: Purple sunbirds forage for nectar, insects, and related creatures in forests and often visit gardens to seek out nectar. The call can be rendered as a humming “zit zit” and “swee swee.” Breeding follows the usual pattern among sunbirds: monogamous breeding pairs, purse-like nests, female incubating eggs, and both parents caring for the chicks.

Purple sunbirds and people: There is little significant interaction between purple sunbirds and humans, other than human appreciation and awe of these jewel-like birds.

Conservation status: These birds are not threatened. ■



GOLDEN-WINGED SUNBIRD

Drepanorhynchus reichenowi

Physical characteristics: Adult male body length is about 4.7 inches (12 centimeters) without the tail, which adds another 4.7 inches (12 centimeters). The tail and wings are bright yellow, the shoulders are dark gray, the dark gray extending to the nape and throat, while the head and downturned beak are lighter gray. The tail is long and ends in two long, very narrow parallel feathers.

Geographic range: These birds are found in East Africa; Kenya, Tanzania, and Uganda.

Habitat: Golden-winged sunbirds live in grassland, bamboo thickets, and tropical mountain forest.



Groups of golden-winged sunbirds defend the area where they feed against other birds that might feed on the nectar. They feed when the nectar has built up to a level so that the whole group can feed. (A. J. Deane/Bruce Coleman Inc. Reproduced by permission.)

Diet: These sunbirds eat mainly nectar, with some insect fare.

Behavior and reproduction: Golden-winged sunbirds are of special interest to ethologists (scientists who study animal behavior) because a typical foraging flock of related individuals guards its major source of nectar outside the breeding season, when nectar is their main food source. They actively chase other birds, including others of their own species, away from the nectar source, usually a patch of shrubbery or other plants bearing flowers and nectar. The effect is to increase the amount of nectar available in a flower patch by letting it collect throughout the day, undisturbed by other nectivores (animals that feed on nectar). The more nectar per flower, the less foraging time the sunbirds have to spend on sipping enough for their needs. In addition, the sunbirds wait for nectar in a flower patch to accumulate to a level adequate for feeding the group before making the sipping rounds.

Breeding follows the usual pattern among sunbirds: monogamous breeding pairs, purse-like nests, female incubating eggs, and both parents caring for the chicks.

Golden-winged sunbirds and people: There is little if any interaction between golden-winged sunbirds and humans. They are valuable to science for their resource-defending behavior, the study of which promises more understanding of avian biology and behavior.

Conservation status: These birds are not threatened. ■

FOR MORE INFORMATION

Books:

Cheke, Robert A., Clive E. Mann, and Richard Allen. *A Guide to the Sunbirds, Flowerpeckers, Spiderhunters, and Sugarbirds of the World*. New Haven, CT: Yale University Press, 2001.

Christy, P., and W. V. Clarke. *Guide des Oiseaux de São Tomé & Príncipe*. Libreville, Gabon: Ecofac, 1998.

Goodman, Steven M., and Jonathan P. Benstead. *The Natural History of Madagascar*. Chicago: University of Chicago Press, 2003.

Kavanagh, James. *African Birds*. Chandler, AZ: Waterford Press, 2001.

Strange, Morten. *Birds of Southeast Asia: A Photographic Guide to the Birds of Thailand, Malaysia, Singapore, the Philippines and Indonesia*. London: New Holland, 1998.

Strange, Morten. *A Photographic Guide to Birds of Malaysia and Singapore: Including Southeast Asia, the Philippines and Borneo*. Singapore: Periplus, 2000.

Sinclair, Ian, et al. *Illustrated Guide to the Birds of Southern Africa*. Princeton, NJ: Princeton University Press, 1995.

Stevenson, Terry. *Field Guide to the Birds of East Africa: Kenya, Tanzania, Uganda, Rwanda, Burundi*. Princeton, NJ: Princeton University Press, 2001.

Van Perlo, Ber. *Birds of Western & Central Africa*. Princeton, NJ: Princeton University Press, 2003.

Periodicals:

Gill, F. B., and L. L. Wolf. "Economics of Feeding Territoriality in the Golden-winged Sunbird." *Ecology* 56 (1975): 333–345.

Irwin, M. P. S. "The Genus *Nectarinia* and the Evolution and Diversification of Sunbirds: An Afrotropical Perspective." *Honeyguide* 45, no. 1 (1999): 45–58.

Irwin, M. P. S. "What Sunbirds Belong to the Genus *Anthreptes*?" *Honeyguide* 39, no. 4 (1993): 211–215.

Kennedy, R. S., P. C. Gonzales, and H. C. Miranda. "New *Aethopyga* Sunbirds (Aves: Nectariniidae) From the Island of Mindanao, Philippines." *Auk* 114 (1997): 1–10.

Pyke, G. H. "The Economics of Territory Size and Time Budget in the Golden-winged Sunbird." *American Naturalist* 114 (1979): 131–145.

Showler, D. A., and P. Davidson. "The Socotra Sunbird *Nectarinia balfouri*." *Sandgrouse* 17 (1996): 148–150.

Web sites:

Sugarbirds, Flowerpeckers, Sunbirds and Spiderhunters of the World (photo gallery). http://www.camacdonald.com/birding/Sampler7_SunbirdsFlowerpeckers.htm (accessed on July 20, 2004).

WHITE-EYES

Zosteropidae

Class: Aves

Order: Passeriformes

Family: Zosteropidae

Number of species: 86 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The white-eyes are small perching birds that look very similar across the species. They have slightly rounded wings; short, pointed bills; a brush-tipped tongue that has four sides and is bordered with hairs both at the sides and at the tip; and black legs and feet. Some species have a distinct ring of tiny, dense, pure-white feathers around each eye (which appears early in life) that is divided by black feathers found between the eyes and bill. The name “white-eye” was given to the birds because of the silky white rings around their eyes. Eye color ranges from gray to brown. Overall, plumage (feathers) vary in shades of yellow-green. The upperparts of the birds are green to greenish yellow, with a gray upper back in some species. Underparts are yellowish from throat to undertail coverts (small feathers around the base of quills on wings, tail, or other parts of bird) in some species while other species are grayish to white. The color of the sides of the body varies from light gray to dark brown. Males and females are similar throughout the year, although males are larger in some species. In addition, males in some species can be more brightly colored than females when in colder climates.

Their short, thin bill is blackish, slightly decurved, curved downward, and sharply pointed. Legs are grayish to brownish. Fledglings (birds that have recently grown the feathers necessary to fly from the nest) and old birds have a pinkish color, while one-year-old birds are darker in color. Older birds molt (phase after breeding where feathers are shed and later grown back) into longer wing and tail feathers.

Continental species are generally 4.0 to 5.5 inches (10 to 14 centimeters) long, have wingspans of 2.2 to 2.6 inches (55 to 65 centimeters), and weigh between 0.3 and 0.5 ounces (9 and 15 grams). Those living in higher latitudes tend to be larger, while island species also tend to have bills, legs, and bodies that are larger than normal.

GEOGRAPHIC RANGE

White-eyes are found widely in sub-Saharan Africa, southern Asia, New Guinea, Australia, and the smaller islands of the Pacific Islands. They have been introduced in Hawaii and Tahiti.

HABITAT

White-eyes are found in almost every kind of wooded habitat including woodlands, forest edges and canopies (uppermost layer of vegetation of forest, treetops), and bushes within parks and gardens. They are found from sea level to altitudes of about 9,800 feet (3,000 meters).

DIET

White-eyes have developed highly specialized tongues, which allow them to feed on nectar. They also feed on fruits (especially in winter) and small insects. The birds hunt for insects and spiders by picking them from foliage, probing into small crevices, and sometimes catching them as they fly. They often forage in gardens, orchards, and at the edges of forests. White-eyes are very aggressive when fighting over food. They often flutter their wings and fight in the air with other birds while clattering loudly.

BEHAVIOR AND REPRODUCTION

White-eyes are very social birds, living in wandering groups when not breeding. White-eyes that live on continents migrate regularly to lower latitudes, though sometimes some of the population remains behind. When breeding, they will drop out of the flock, returning after breeding is finished. They are often seen huddling, resting, foraging, bathing, and roosting together, while sunning is done alone. Breeding mates, parent-offspring, young siblings, and prospective partners often preen each other (grooming of feathers with the bill). Wing fluttering and bill clattering are part of their daily activities, which shows rank

and status in flocks and decides who has the better chance to reproduce and to survive. Their warbles sound like a rich melody, and are similar across all species. Calls of both sexes are long and sad sounding. Other calls are high-pitched and short, with constant exchanges just before dawn between birds of a flock that are migrating. Other specialized calls include ones for alarm, roosting, begging, huddling, aggression, and distress. Bills are often clattered when aggression is showed.

Courtship involves horizontal wing quivering and some activities that portray nest building (without actually building a nest). Male birds sing for up to twenty minutes at dawn throughout the breeding season, while some singing is also performed at dusk and occasionally throughout the day. Males also have a courtship warble that is softer sounding than the warble sounded during nonbreeding times.

Breeding season usually begins at the start of the summer rains in September or October, and ends six months later. Birds usually mate for life, and breed in small territories. Information about nests and eggs are known for only about half of the species. What is known is that nests are cup-shaped and constructed from plant fibers. They are usually slung from a small fork under the cover of vegetation at any height. The glossy eggs are colored from whitish to pale blue or bluish green, with a few species having spotted eggs. Eggs measure 0.55 by 0.43 inches (14 by 11 millimeters) to 0.79 by 0.59 inches (20 by 15 millimeters). Females lay from one to five eggs, with three being average. The incubation period (time that it takes to sit on eggs before they hatch) last ten to twelve days. Both parents help in the construction of the nest, in incubation, and with feeding of the young. The chicks are about 0.07 ounces (2 grams) when first hatched. They are fed insects at first, but are given fruits at about the time of fledgling. Up to five clutches (group of eggs hatched together) can be laid in one breeding season. A new nest is usually constructed for each clutch. Parents often take care of two clutches at a time. The nestling period (time necessary to take care of young birds unable to leave nest) is eleven to thirteen days.

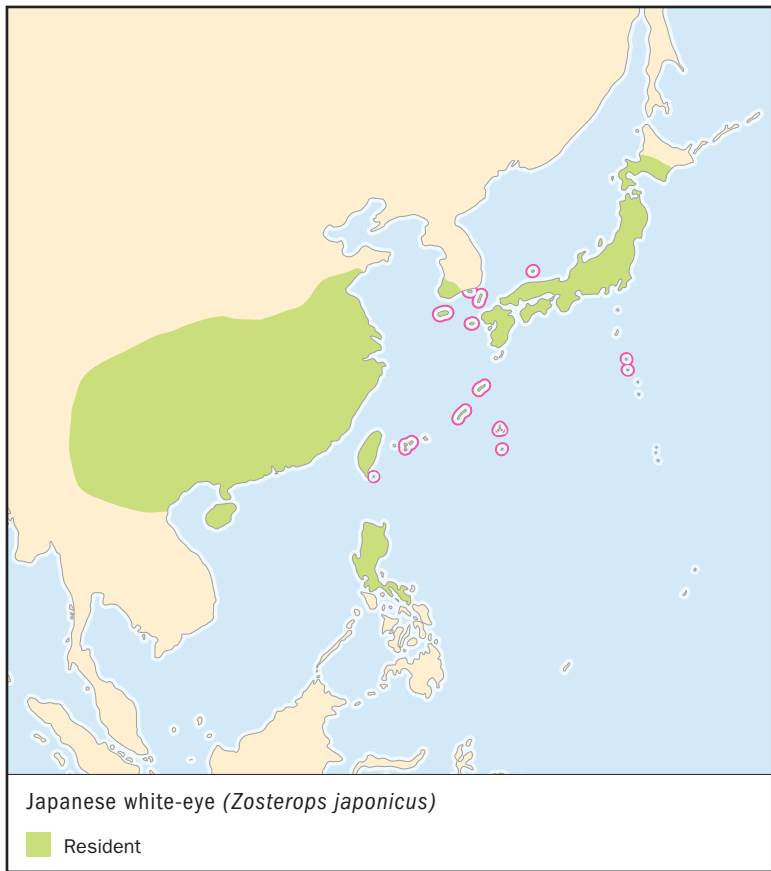
WHITE-EYES AND PEOPLE

People often keep white-eyes as pets, often for their beautiful songs. They are considered pests in vineyards and orchards in southern Africa and Australia. However, they are also considered beneficial because they eat aphids and other pest insects.

CONSERVATION STATUS

Of the eighty-six species of white-eyes, six species are considered Critically Endangered, facing an extremely high risk of extinction; one species is considered Endangered, facing a very high risk of extinction; and fourteen species are Vulnerable, facing a high risk of extinction. Two species have recently been classified as Extinct.

SPECIES ACCOUNT



JAPANESE WHITE-EYE *Zosterops japonicus*

Physical characteristics: Japanese white-eyes have an olive-green back, pale gray underparts, and lemon-yellow throat and undertail coverts. They are about 4.7 inches (12 centimeters) long, and weigh about 0.4 ounces (11 grams). Their wing size is between 20.5 and 25.6 inches (52 and 65 centimeters), and the tail length is between 13.4 and 18.1 inches (34 and 46 centimeters).

Geographic range: Japanese white-eyes are distributed in the Japanese islands, China, Taiwan, Hainan Island, and the Philippines. They have been introduced into Hawaii and Bonin Island.



During the breeding season, each breeding pair of Japanese white-eyes defends a small nesting territory. After the breeding season, the birds form small flocks of numerous species. (Illustration by Wendy Baker. Reproduced by permission.)

Habitat: Japanese white-eyes live in broadleaf evergreen forests and deciduous forests on lowlands and foothills of mountains. They are found from sea level to the upper canopies of forests. The birds are also found on cultivated lands and gardens.

Diet: The diet of Japanese white-eyes consist of arthropods (invertebrate animal with jointed limbs), soft fruits, berries, and nectar.

Behavior and reproduction: After breeding season, the birds form small flocks of numerous species, often for foraging. They are partially migratory birds, moving to villages and suburban gardens in the winter. Males sing beautiful songs. Japanese white-eyes breed in the spring, with each breeding pair defending a small nesting territory. Cup-shaped nests are hung from a fork of shrubs. Females lay three to four eggs, which are incubated for about eleven days.

Japanese white-eyes and people: People keep males in cages in order to enjoy their songs. The birds are often found in Japanese literature.

Conservation status: Japanese white-eyes are not threatened. They are common in most parts, but in some remote areas the birds are vulnerable. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

AUSTRALIAN HONEYEATERS

Meliphagidae

Class: Aves

Order: Passeriformes

Family: Meliphagidae

Number of species: 182 species

PHYSICAL CHARACTERISTICS

Australian honeyeaters differ with respect to their outward appearance. They are mostly small birds with some tiny species and others as large as jays. They are longish birds with long, pointed wings, strong legs and feet, sharp claws, and rather long, down-curved and sharply-pointed bills (which vary from this basic shape, based on diet differences). They are usually dull colored, mostly greenish, olive, or brown. The smaller species often have yellow on their under parts. Some of the smaller species are black and white, while some of the larger species are black, gray, dark green, or streaked brown. Most Australian honeyeaters have colored bare skin around the eyes; a somewhat swollen mouth area; fancy wattles (skin that hangs from the throat); and a head that is bald. Such characteristics often change in color as they get older or seasonally as they breed.

In most species, the bill and legs are easily noticed due to their bright color. The bill varies in shape and size, sometimes being short and straight, slightly decurved, or quite long and markedly decurved. All birds have a unique tongue structure, being deeply notched and finely edged with bristles at the tip, forming four parallel brushes. Some of the juveniles have plumage (feathers) that differs greatly from adults, but most differences are small. Adults are 3 to 20 inches (7 to 50 centimeters) long and weigh between 0.25 and 7.0 ounces (7 and 200 grams).

GEOGRAPHIC RANGE

Australian honeyeaters are found throughout Australia (except for dense grasslands without trees and shrubs),

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

New Guinea, Melanesia, Moluccas, and Lesser Sundas, west to Bali, Micronesia, New Caledonia, and New Zealand; through Polynesia to the Hawaiian Islands. Two species occur in southern Africa.

HABITAT

Australian honeyeaters inhabit tropical, subtropical, and temperate (mild) rainforests, eucalyptus (yoo-kah-LIP-tus) forests (tall, aromatic trees), monsoonal forests, woodlands that contain eucalyptus, casuarinas (trees with needle-shaped leaves that form whorls on short branches), native pines, and acacias (uh-KAY-shuhz; flowering trees). They can also be found in semi-arid woodlands and scrublands, desert shrub-steppes, coastal and upland heathlands (shrubby uncultivated land), and parks and gardens.

DIET

All Australian honeyeaters eat nectar and invertebrates (animals without a backbone), especially insects. They regularly fly to native and exotic flowers. They also eat honeydew (a sticky substance from bugs, called lerp) and sap from trees. Smaller sized Australian honeyeaters consume tiny insects captured in flight, as well as caterpillars and beetles taken from foliage. Species with extra-strong bills probe beneath bark for insects and honeydew. Infrequently eaten foods are spiders, crustaceans (hard-shelled creatures), and small lizards. Some of the largest species eat eggs and nestlings (young birds unable to leave the nest) of other birds. In wetter climates, fruits are a major part of the diet.

BEHAVIOR AND REPRODUCTION

They are active birds, sometimes noisy and aggressive. Australian honeyeaters are seldom found alone, but often seen in family groups or loose flocks. Species that migrate usually occur in large flocks. Some species that inhabit arid and semi-arid habitats are nomadic as they regularly move to different locations. When feeding on large nectar supplies, many birds will come together in noisy groups that chase each other. Species of larger sizes will often dominate smaller birds, taking over better feeding spots. They are often seen probing among flowers for nectar. During breeding and molting (the phase after breeding), the birds are often quiet and difficult to find due to little activity.

Their songs and calls range from beautiful to harsh. Species of smaller sizes have twittering, musical songs, and whistling calls. Medium-sized birds have many different songs and calls. Larger birds emit harsh cackling and coughing calls.

Most Australian honeyeaters are monogamous (muh-NAH-guh-mus; having one mate), although polygamy (puh-LIH-guh-mee; having more than one mate) and a mixed mating system also occurs. It is thought that about one-third of the species are cooperative breeders, their roles ranging from occasional helpers to members of complicated colonies. Most of the birds have long breeding seasons that last for six or more months. Breeding occurs most frequently in late winter to late spring (August to October).

Nests are built from low bushes nearly on the ground to the tops of tall trees. Most nests are located in forks of trees or suspended from foliage. The woven nests are made of spider webs, animal hair, plant down, wool, artificial materials, feathers, and human hair. Some species build hollow nests.

Females lay eggs that range in color from white to pale pink or buff, with purple, red, brown, or black spots and blotches. The average number of eggs is two, but some species lay only one egg. Other species lay up to three or four eggs. The female does most of the incubation (process of sitting on and warming the eggs), which usually lasts from twelve to seventeen days. Both parents feed the young, which usually consists of insects but can be nectar in some species. The fledgling period (the time it takes for a bird to grow feathers necessary to fly) ranges from eleven to twenty days, but can be as long as thirty-two days in the hollow-nesting species.

AUSTRALIAN HONEYEATERS AND PEOPLE

People often find Australian honeyeaters in parks and gardens. A few species are regarded as pests to fruit farmers. People hunt some of the larger species for food. The birds regularly scatter seeds throughout the forest, helping to maintain forest growth. They also help to pollinate many native plants.

CONSERVATION STATUS

Of the various species of Australian honeyeaters, one species and four subspecies are Near Threatened, in danger of becoming threatened with extinction; two species are Endangered, facing a very high risk of extinction; two species and one subspecies are

Critically Endangered, facing an extremely high risk of extinction; and five species are Vulnerable, facing a high risk of extinction. There is not much information on many Indonesian species. Many species have declined in numbers due to the clearing of forests and woodlands for farming and habitation by humans and to the destruction of their habitat in other ways.



BISHOP'S OO

Moho bishopi

SPECIES ACCOUNTS

Physical characteristics: Bishop's oos have a smoky black neck, back, and underparts with narrow white shaft lines on the feathers. The wings and tail are black. Males have a long, graduated tail with yellow feathers on the wing, neck, and tail coverts (small feathers around quill base). At the ear coverts, undertail, and axillary are clumps of golden feathers. They are about 12 inches (31 centimeters) long.

Geographic range: Bishop's oos are found on the island of Maui in the Hawaiian Islands.

Habitat: They inhabit dense rainforests in mountains.

Diet: They eat nectar from lobelia flowers (plants with two-lipped blue, red, or white flowers), but also eat insects from the forest's upper canopy.



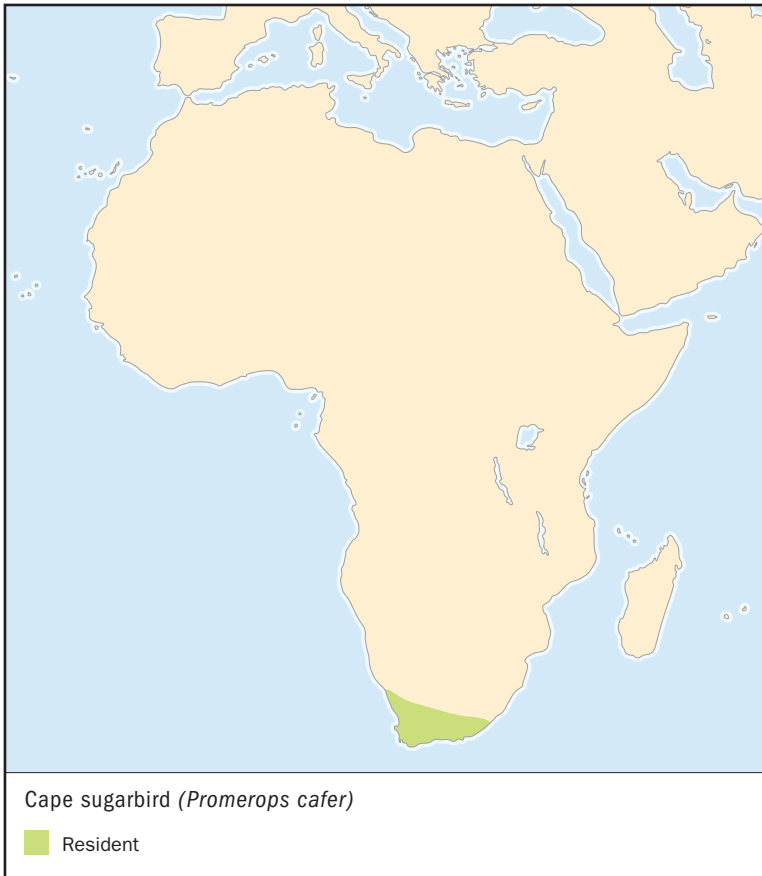
Bishop's oos live in rainforests in the mountains of Maui, one of the Hawaiian Islands.

(Illustration by Emily Damstra. Reproduced by permission.)

Behavior and reproduction: Bishop's oos are curious birds, but are also timid. They have a very loud call "owow, owow-ow." The long tail and yellow feathers on the male's wing, neck, and tail coverts are used to attract females. Reproductive activities are not known, other than it is believed that they build hollow nests.

Bishop's oos and people: Native Hawaiians have caught Bishop's oos for their yellow plumes, which were used for ceremonial cloaks.

Conservation status: Bishop's oo is considered Critically Endangered. ■



CAPE SUGARBIRD

Promerops cafer

Physical characteristics: Cape sugarbirds have rufous (reddish) head and breast. They have a distinctive long bill and long, brownish tail feathers. The chin is white with a moustache-looking dark streak. The abdomen is whitish, vent (waste opening) yellow. Females are 9.5 to 11.5 inches (24 to 29 centimeters) long, and males are 14.5 to 17.0 inches (37 to 44 centimeters) long, including the long tail. Both weigh about 1.5 ounces (42 grams).

Geographic range: Cape sugarbirds are found in South Cape Province, South Africa.

Habitat: Their habitat includes scrublands of the Western Cape area of South Africa. The scrubs consist generally of shrubs that resemble heaths (low evergreen shrubs) with hard leaves.

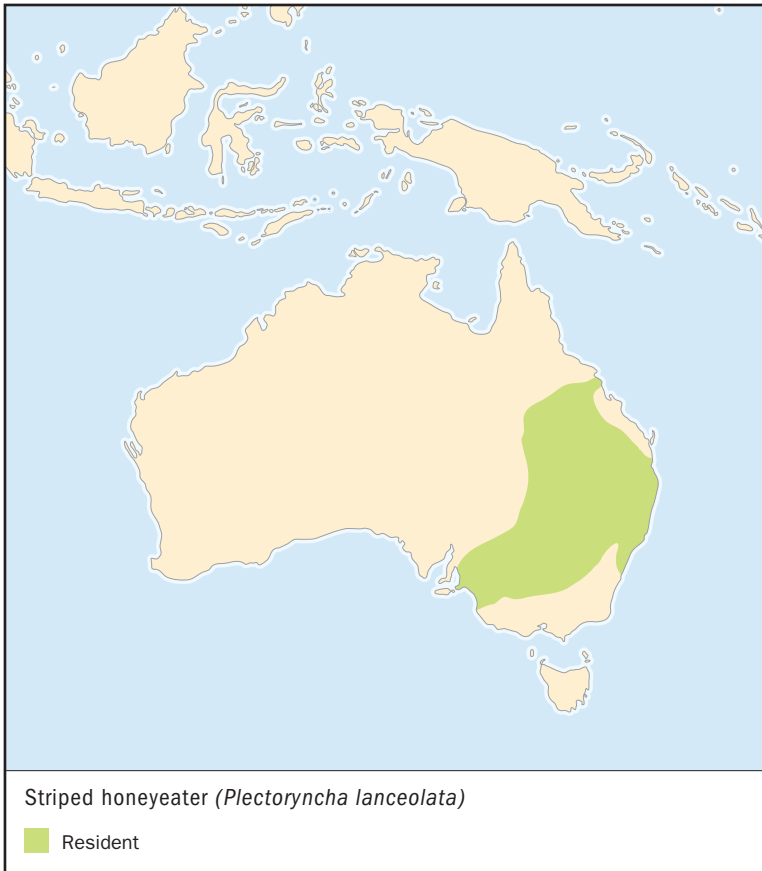
Diet: Their diet consists of nectar and insects captured in flight or picked from plants.

Behavior and reproduction: Cape sugarbirds are usually found alone or in pairs, but occasionally in small flocks. In order to attract females, males fly with both wings clapped together and keep their tail held high. Both sexes defend against other sugarbirds and sunbirds. Their song is a jumble of unpleasant notes.

They breed from February to August, depending mostly on when local vegetation flowers. A deep cup-shaped nest is placed in a bush or low tree. It is constructed from grass and twigs, and lined with plant down. Females lay buff to reddish eggs with brown spots, streaks, and blotches.

Cape sugarbirds and people: Cape sugarbirds are not known to have a special significance to people.

Conservation status: These birds are not threatened. ■



STRIPED HONEYEATER

Plectoryncha lanceolata

Physical characteristics: Striped honeyeaters are about 8.5 inches (22 centimeters) long and weigh about 1.4 ounces (40 grams). Their cheeks and the area from the forehead to the nape (back part of the neck) is dark with white stripes. Their underparts are a pinkish buff, and upperparts and tail are grayish.

Geographic range: The birds are located in eastern Australia, from mid-north Queensland to northern Victoria and west to the York Peninsula, especially inland from the Great Dividing Range.

Habitat: They live in riparian (along the riverbank) woodlands with casuarina (a type of tree) and mallee (shrubby eucalyptus) and other



Striped honeyeaters eat nectar from eucalyptus, mistletoes, and other plants, and sometimes eat fruits and seeds. (Illustration by Emily Damstra. Reproduced by permission.)

semiarid woodlands with eucalyptus, acacia, and native pine.

Diet: Striped honeyeaters eat nectar from eucalyptus, mistletoes, and other plants, and sometimes eat fruits and seeds. They also occasionally eat insects and spiders that they capture from foliage and tree bark or that they catch in the air.

Behavior and reproduction: Striped honeyeaters are usually found in pairs or small groups. They sound an attractive whistling song. They generally do not migrate, but do show local movements. The species breeds from August to January. Nests are suspended off of drooping foliage. They tend to like to build nests near gray butcherbird nests. Females lay from two to five eggs, with three being average. Both parents incubate the eggs. After hatching, both parents feed the young, but sometimes have helpers feed the chicks. The time it takes to hatch the eggs is sixteen to seventeen days, while the fledgling period is also sixteen to seventeen days.

Striped honeyeaters and people: People sometimes regard them as pests in orchards.

Conservation status: Striped honeyeaters are not threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

VIREOS AND PEPPERSHRIKES

Vireonidae

Class: Aves

Order: Passeriformes

Family: Vireonidae

Number of species: 43 species

family CHAPTER

PHYSICAL CHARACTERISTICS

Vireos and peppershrikes are small, plain-colored songbirds with a somewhat heavy to very heavy, pointed bill that has a small hook at the end. For most species, the wings are either rounded at the end or are more pointed. Their legs are short but strong. Vireos and peppershrikes are commonly olive brown, olive gray, greenish, or yellowish on the upper parts, and white, light gray, yellow, or yellow-washed on the breast and abdomen. A black line runs through the eyes of most species, but sometimes a white strip goes above the eye while in other species a light-colored eye ring is present. A pale wing-bar is usually seen. Females and males are colored almost the same. They are 4.0 to 6.25 inches (10 to 16 centimeters) long and weigh between 0.3 and 1.5 ounces (8 and 40 grams).

GEOGRAPHIC RANGE

The family ranges widely over the Americas including most of the continental United States, all but the northern-most parts of Canada, Mexico, and Central America, most of South America including as far south as Uruguay, northern Argentina, and northern Chile.

HABITAT

Vireos and peppershrikes are found in boreal (northern), temperate, and tropical habitats including woodlands, scrublands, and forests. Some prefer the forest canopy (treetops), while others like dense undergrowth, forest edges, or mangroves (tropical evergreen tree of tidal coasts).

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

DIET

Their diet consists of insects, spiders, and other invertebrates (animals without a backbone) taken from foliage, flowers, bark, and other plant surfaces. Small berries and other fruits are also eaten.

BEHAVIOR AND REPRODUCTION

Vireos and peppershrikes are usually solitary but active birds, but sometimes appear as a breeding pair or family group. During the nonbreeding season, they are sometimes found in foraging flocks of many different species of birds. Their song is heard often, even during the hottest parts of the day when most birds are quiet, and it usually is loud and melodic, but seldom is it considered beautiful. The song generally consists of several repeated phrases. Different species range from about ten to more than 100 song types. Males sing most frequently, being vocal especially during foraging. Males commonly sing while sitting on the nest. Northern species of the birds migrate, while southern species do not. The trip may vary from 100 miles (160 kilometers) to 3,000 miles (4,800 kilometers).

After migration is complete, birds pair up soon after arriving in their spring breeding territory. Males defend the territory with their song. Open, cup-shaped nests are woven from spider and silkworm webbing, grass stems, other plant fibers, lichens, mosses, and feathers. In species where both sexes build the nests, males construct a rough bag, and females make the lining. Birds locate the nest at the fork of a tree branch, usually suspended by the rim from the bark. The nests are usually located close to the ground or high in the forest canopy.

Females lay two to five whitish to speckled or spotted eggs of various colors. Both females and males perform incubation and caring for the young. The incubation period (time it takes to sit on and warm the eggs before hatching) is usually twelve to fourteen days, and the nestling period (time necessary to take care of young unable to leave nest) is usually nine to eleven days. Fledglings cannot fly well when first leaving the nest, but are good at running along branches and within shrubs. Both parents feed them for about three weeks after leaving the nest. Migratory species usually have two to three clutches (group of eggs hatched together) each year.

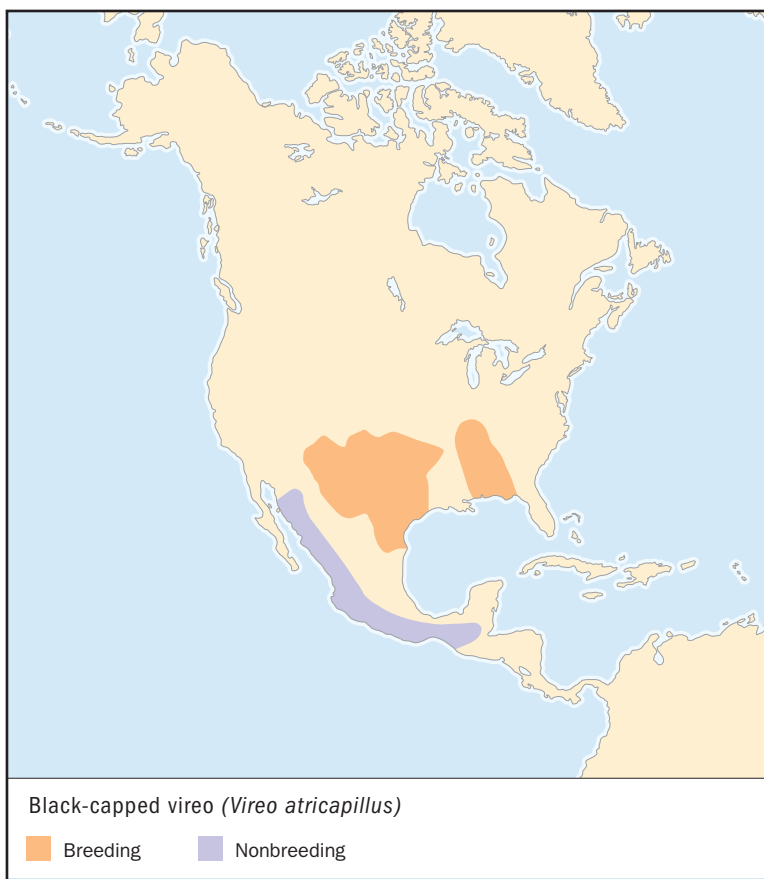
VIREOS, PEPPERSHRIKES, AND PEOPLE

Vireos and peppershrikes have no special relationship with people.

CONSERVATION STATUS

One species is listed as Critically Endangered, facing an extremely high risk of extinction, dying out; one species is listed as Endangered, facing a very high risk of extinction; one species is listed as Vulnerable, facing a high risk of extinction; two species are listed as Near Threatened, in danger of becoming threatened with extinction. In all cases, the species are at risk due to loss of habitat as a result of converting native lands to agriculture, thinning out or elimination of forests due to logging, and other detrimental human activities.

SPECIES ACCOUNTS



BLACK-CAPPED VIREO *Vireo atricapillus*

Physical characteristics: Black-capped vireos are small vireos with olive-colored upperparts. Males have white under parts, yellow wash beneath the wings, yellowish-white wing-bars, reddish eyes, a blackish bill, a glossy black head, and blue-gray legs and feet. They also have white eye-rings that look like broken eyeglasses. Females are similar except for a slate gray to bluish gray head, white eye-rings, pale lemon-yellow wing bars, buffy white under parts, and yellowish wash on the sides and flanks. Juvenile females have plumage that is more buff-colored. Adults are about 4.5 inches (12 centimeters) long, with a wingspan of about 8 inches (20.3 centimeters) and a weight of about 0.3 ounces (8.5 grams).

Geographic range: During cold months, black-capped vireos are found on the west coast of Mexico. During the warm months when the birds breed, they are located in parts of Texas, New Mexico, Oklahoma, Missouri, and north-central Mexico.

Habitat: Black-capped vireos inhabit open, grassy woodlands that contain clumps of shrubs and trees, especially oak scrublands and dense low thickets. Within that environment, they are usually found around low-lying vegetation.

Diet: They feed mostly on invertebrates such as insects, their larvae (LAR-vee; active immature insects), and eggs, taken from the deep cover among leaves of trees and shrubs. Other food sources are small spiders, small fruits, and berries.

Behavior and reproduction: Black-capped vireos are solitary birds. They migrate short distances between breeding and nonbreeding seasons, often going southwest, wintering along the western coast of Mexico. The birds defend breeding territories. Their song is a hurried string of husky-sounding two- or three-note phrases that is repeated slowly, such as “grrtzeepididid, prididzeegrrt . . .” Their call is a “ji-dit” or “tsidik.”

The birds are monogamous (muh-NAH-guh-mus; having one mate). Males court females with fluttering display flights. The male

then sings a courtship song, often with the spreading of his wings. The mating pair builds a cup-shaped nest that is made of twigs, bark, and leaves, surrounded with silk and lined with fine grasses. The nest hangs down from a branch fork of a shrub or low tree, about 1 to 15 feet (0.3 to 4.6 meters) off the ground in scrub oak or other short deciduous trees. Females lay three to four white, unmarked eggs. The incubation period is fourteen to nineteen days, which is shared by male (alternating with female during the day) and female (during the night). Both birds feed the young. Two broods are produced each year.

Black-capped vireos and people: There is no known significant relationship between people and black-capped vireos.

Conservation status: Black-capped vireos are not listed as threatened internationally, however, some populations face habitat loss from mining, agriculture, flood-control projects, and reservoir construction. Because of these problems, the U.S. Fish and Wildlife Service placed the bird on the U.S. Endangered Species List. Black-capped vireos are also hurt by cowbirds, which often threaten the birds especially during the breeding season. Efforts in Texas and Oklahoma are underway to trap and remove cowbirds and restrict human activities from areas where black-capped vireos have been most hurt. ■



RUFIOUS-BROWED PEPPERSHRIKE

Cyclarhis gujanensis

Physical characteristics: Rufous-browed peppershrikes have a somewhat heavy body, large head, and heavy bill. The back is dark olive-green, chest and flanks are yellow, the belly is white, and the top of head is gray with a broad rufous (reddish) stripe over the eyes. Males and females look alike. They are 5.5 to 6.0 inches (14 to 15 centimeters) long.

Rufous-browed peppershrikes stay in the thicker parts of the foliage, and so they are easier to hear than see. Their song is a repeated, musical phrase, and each individual's is a bit different. (Illustration by Michelle Meneghini. Reproduced by permission.)



Geographic range: They are widely found in Central America from southeastern Mexico to Panama, and in parts of South America as far south as central Argentina (but are not found around most of the area affected by the Amazon River).

Habitat: Their habitat consists of both dry and moist evergreen forest borders, scrublands, gallery and secondary forests, and clearings with trees. The birds are found at altitudes up to 9,200 feet (2,800 meters).

Diet: The birds feed on insects, caterpillars, and other invertebrates found on foliage, flowers, and tree limbs. They also eat small fruits.

Behavior and reproduction: Rufous-browed peppershrikes move about in trees with sluggish movements. They usually stay in the thicker parts of the foliage, so are more often heard, rather than seen. The birds do not migrate, but do defend their breeding territory. Their song is a repeated, musical phrase that is sung year-long. The type of song differs depending on individual birds, and where they are located in their range.

The birds stay together throughout the year. They build cup-shaped, thin-walled nests from grasses, which hang from a fork of a high tree branch. Both the male and female incubate the eggs and feed the young.

Rufous-browed peppershrikes and people: There is no known significant relationship between people and rufous-browed peppershrikes.

Conservation status: Rufous-browed peppershrikes are not threatened. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

NEW WORLD FINCHES

Emberizidae

Class: Aves

Order: Passeriformes

Family: Emberizidae

Number of species: 291 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

New World finches consist of buntings and New World sparrows. They are small- to medium-sized birds, with a short, conical bill, medium-sized legs, rather large feet, and a short- to medium-length tail. The bill's upper and lower parts can be moved sideways in some species. Most species have dull black, brown, olive, gray, or beige plumage (feathers), but some species are brightly colored in rich chestnut or pale buffy browns with white or black areas. All have wings with nine main feathers, although a short tenth may be present. Faces contain patterns of black, white, and buff, sometimes with yellow or buffy orange stripes. Males are generally larger than females. Sexes look alike in plumage in most species but are very different in others. New World finches are 4.0 to 9.5 inches (10 to 24 centimeters) long and weigh between 0.3 and 2.6 ounces (8 and 75 grams).

GEOGRAPHIC RANGE

New World finches range throughout the world, except for the interior of Greenland, far Southeast Asia, New Guinea, Australia, and Madagascar. They have been introduced in New Zealand.

HABITAT

New World finches live in open and semi-open bushy or grassland areas, forest edges, tundra, prairies and meadows, deserts, hilly meadows, salt and freshwater marshes, and oak and pine woods.

DIET

Diet consists mostly of seeds, berries, fruits, and other vegetation, but often switches to protein-rich insects when birds are feeding their young. Many birds feed near the ground, scratching away leaf litter to find food. Its conical bill is adapted to pick up seed shells and take out seeds.

BEHAVIOR AND REPRODUCTION

New World finches are diurnal (active during the day) birds; although some species sing at night during breeding. While singing, males sit where they will be easily seen, and throw back their head and ruffle their crown (top of head) or rump feathers. The birds sing mostly songs of simple notes. Species of tundra or prairie regions sing while in flight. The birds are territorial, with males defending with the use of songs, chases, and fights. Territories are used for nesting and foraging, but may leave the territory to look for food. New World finches usually migrate in small, loose flocks of numerous species. Some species form large flocks.

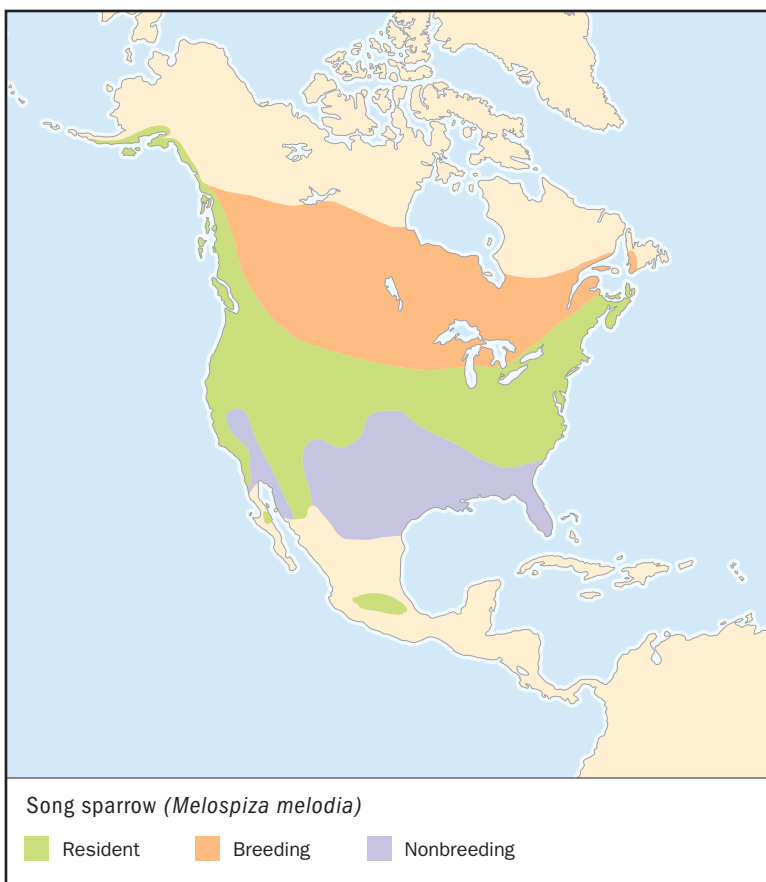
They are for the most part monogamous (muh-NAH-guh-mus) birds (that is, during a breeding season, one male is associated with one female). Exceptions occur in some species, probably due to differences in territory quality. Males sing to attract a mate, followed by chasing and shaking her, and then tumbling together on the ground. In some cases, birds mate with several individuals. The nest that is built is usually cup-shaped, and neatly made from grasses, weeds, roots, and other fibers. It is lined with mosses, hair, feathers, or wool. Nests are usually built on the ground or low in a bush. Females lay four to six off-white (usually light brown or light blue with reddish, brownish, or blackish marks) eggs. In all cases, only the female incubates (sitting before hatching) her eggs, usually for ten to fourteen days. When a breeding pair is present, both members will help to feed and care for young. The fledgling period (time necessary for young bird to grow feathers necessary to fly) is ten to fifteen days.

NEW WORLD FINCHES AND PEOPLE

People often keep New World finches as pets in order to enjoy their beautiful songs. They are beneficial in agricultural communities because they eat many insects.

CONSERVATION STATUS

Six species of emberizids are listed as Critically Endangered, facing an extremely high risk of extinction; seven species are listed as Endangered, facing a very high risk of extinction; nine species are listed as Vulnerable, facing a high risk of extinction; and two species are listed as Near Threatened, in danger of becoming threatened with extinction.



SONG SPARROW

Melospiza melodia

SPECIES ACCOUNTS

Physical characteristics: Song sparrows are medium- to large-sized sparrows that vary greatly in physical characteristics due to its large geographical range. They have streaked plumage (feathers), a long tail with a rounded tail tip, a brown to light rusty rounded head with a paler median crown stripe, a broad, grayish stripe above the eyes and very visible brown cheek stripes. They also have a whitish throat, stout bill, a brownish, grayish, or brownish gray patchy back, a heavily streaked breast with a dark central spot, whitish under parts, and pinkish legs and feet. Males and females look alike. Young song sparrows have brown crowns, heavily streaked under parts, and are more buff colored than adults. Adults are 5.75 to 7.50 inches (14.6 to



Song sparrows live in a variety of habitats throughout North America. (Bob & Clara Calhoun/ Bruce Coleman Inc. Reproduced by permission.)

19.1 centimeters) long, with a wingspan of 8.25 to 12.5 inches (21.0 to 31.8 centimeters) and a weight of about 0.7 ounces (20 grams).

Geographic range: They live along the western coast of Alaska, Canada, central Mexico, Baja California, and the western coast of the United States and throughout most of the northern, west-central and east-central parts of the United States. They breed from the Aleutian Island, along the southern coast of Alaska, east across southern Nunavut, northern Ontario, and central Quebec to southwest Newfoundland, and south to Georgia, Missouri, Nebraska, New Mexico, Arizona, and California. Most of the northern breeding birds migrate in the fall to southern Florida, the Gulf Coast, northern Mexico, and southern Baja California.

Habitat: Song sparrows are located in open brushy and shrubby areas, thickets, riparian (along the riverbank) scrublands, weedy fields, and grassy areas; often near ponds, streams, marshes, and seacoasts, especially where thickets occur. In winter, they are found in brush lands and woodland edges.

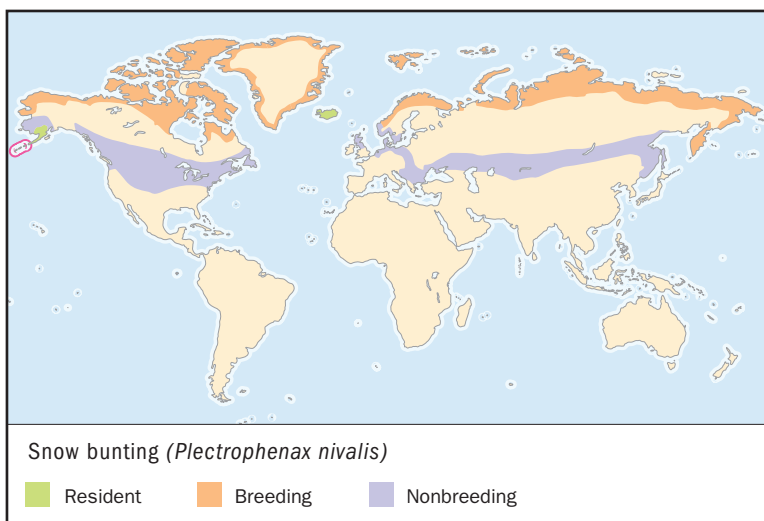
Diet: Song sparrows feed mostly on insects (and their larvae [LAR-vee]) and other invertebrates in the summer, but switch to mostly seeds in the winter. They also eat grains, berries, and some fruits, mostly from the ground or by picking food off of trees, bushes, and other vegetation. Coastal species catch small mollusks and crustaceans (hard-shelled creatures).

Behavior and reproduction: Song sparrows prefer to stay in low vegetation. When on the ground, they hop or run. When singing, they perch in a tree, bush, or on top of a weed where they are easily seen. They sing loud, pleasant, musical phrases; usually whistling two to three clear notes, followed by a trill. There is much song variation with the typical song being three or four short clear notes followed by a buzzy “tow-wee,” then a trill. Their hollow call is a “chimp” or “what.” When alarmed, they give a high, hard “tik.” When flying, they pump their tail up and down and give out a thin “seeet.” Territories are defended with chases and fights. In winter, they form into loose flocks that contain many sparrow species.

They prefer living alone and in pairs, but may be found in small loose flocks in winter, often with other sparrow species. They are generally monogamous birds, but can be polygynous (puh-LIJ-uh-nus; having more than one mate). Males aggressively defend their territory, often fighting with other males. Their bulky cup-shaped nests are made of leaves, bark strips, grasses, stems, and other plants; and lined with fine materials. Song sparrows usually place nests on the ground, among grasses, or in a low-lying bush or thicket. Nests are usually near a stream. Females lay three to six eggs that are greenish white with reddish brown markings. Nesting is done from late February to August. The incubation period is ten to fourteen days, and the fledgling period is seven to fourteen days. The pair feeds and takes care of the young. Two to three broods are possible each year, with four broods possible in southern areas.

Song sparrows and people: There is no known significant relationship between song sparrows and people.

Conservation status: Song sparrows are not threatened. They are often hurt by parasitism from the brown-headed cowbird, which lays its eggs in the song sparrows’ nests so that the song sparrow takes care of the cowbird’s young, neglecting its own chicks. ■



SNOW BUNTING

Plectrophenax nivalis

Physical characteristics: Snow buntings show differences between males and females, but all have a rounded head, stocky body, and white outer tail feathers. Generally, females are browner in color, with less white on the plumage. Males (in summer) have a white head, black back that sometimes has brown patches, a black rump patched with white, white outer tail feathers partially tipped with black, and white under parts. The white areas, in winter, are thinly coated with pale rusty brown. Females (in summer) look like breeding males, but have a crown that is dusky and black areas are paler, often brownish. In winter, females look like winter males. Juveniles are grayish with a pale abdomen and buffy eye rings. They are 6.0 to 7.5 inches (15 to 19 centimeters) long, and weigh about 1.5 ounces (42 grams).

Geographic range: In the autumn, they migrate to the British Isles, the coast of northern France, Denmark, Poland, Germany, southern Russia, Manchuria, Kuril Islands, Korea, and Hokkaido (the northernmost Japanese island); and in North America to western and southern Alaska and from central and southern Canada south along the Pacific coast to northern California, the central Plains, and coastal North Carolina. In the spring, they move north to Iceland, northern Scotland, the mountains of Sweden and Norway, Spitzbergen, Franz



Snow buntings eat insects and other invertebrates during the summer, but switch mostly to seeds and grains in the winter. (Hans Reinhard/Bruce Coleman Inc. Reproduced by permission.)

Joseph Land, north Kola Peninsula, Novaya Zemlya, northern Russia and northern Siberia east to Wrangel Island, the Bering Strait, and south to east Kamchatka, northern Alaska and mountains of Alaska, northern Canada north to Labrador, and the coast of Greenland.

Habitat: During breeding season, they are found in sparse, dry, rocky tundra areas such as seashores, mountain slopes, and cliffs. During times of migration and nonbreeding season, they are found in fields, pastures, roadsides, and at beaches.

Diet: Snow buntings eat insects and other invertebrates during the summer, but switch mostly to seeds and grains in the winter.

Behavior and reproduction: They are migratory birds, with males arriving at breeding areas before females. At this time, males find a territory and begin to defend it by chasing away other birds, singing while in flight to make their presence known, and fighting when

necessary. They run while on the ground, generally staying on the ground when not flying. Their song, sung during breeding, is a loud, high-pitched musical warbling. Their calls include a sharp, whistled “tew,” a short buzz, and a musical rattle or twitter.

Snow buntings are for the most part monogamous birds, but sometimes males or females will have two mates. Nesting occurs from late May through July. Nests are made with dried grassy plants, lichens, and grasses, and look like a large, thick-walled bulky cup. They are constructed on the ground, frequently in rock crevices. Sometimes they build nests in birdhouses and other artificial structures. Females lay between three to nine eggs, but usually from four to seven. The incubation period is from ten to fifteen days, and the fledgling period is from ten to seventeen days after hatching. Both in the breeding pair feed and take care of young.

Snow buntings and people: There is no known significant relationship between people and snow buntings.

Conservation status: Snow buntings are not threatened. ■



BLUE-BLACK GRASSQUIT

Volatinia jacarina

Physical characteristics: Blue-black grassquit males and females portray different characteristics. Males are blue-black all over, while females are brown with paler under parts and a dark-streaked chest. Juveniles look like adult females. They are 4.0 to 4.3 inches (10.2 to 10.9 centimeters) long, and weigh about 0.34 ounces (9.7 grams).

Geographic range: They range from central Mexico south to northern Chile, east to the eastern coast of Brazil, and south to central Argentina. They are also found on Grenada.

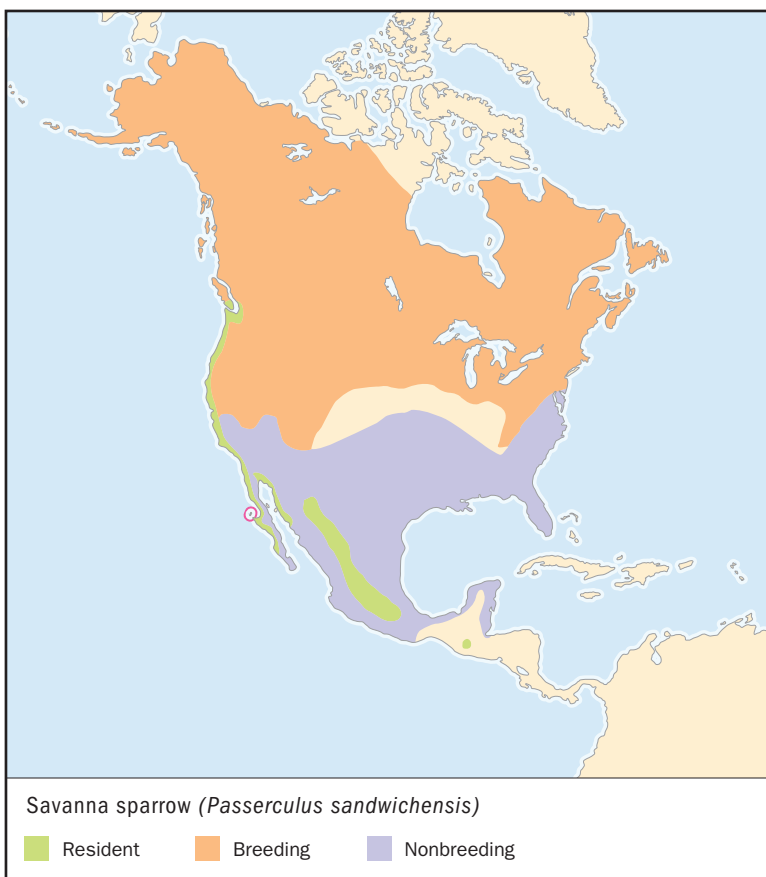
Habitat: Blue-black grassquits like low, seasonally wet grasslands, arid lowland scrublands, farmlands, riverside thickets, and weedy fields. The birds are found from sea level to 3,600 feet (1,100 meters) in altitude.

Diet: Their diet is almost always grass seeds, although they do sometimes eat insects and berries. They pick seeds from grass seed heads and from grit and seeds left on roads.

Behavior and reproduction: Males sing from perches that make them very visible. They also jump upward with a flick of their wings. In winter, they join flocks of a few hundred seed-eating birds. They are monogamous birds. Nests are built low to the ground, usually not more than 10 feet (3 meters) off the ground. From May through October, females lay two to three eggs. Incubation and fledgling periods are not known.

Blue-black grassquits and people: People and blue-black grassquits have no known significance between them.

Conservation status: Blue-black grassquits are not threatened. They are abundant in many areas. ■



SAVANNA SPARROW

Passerculus sandwichensis

Physical characteristics: Savanna sparrows are very variable in color. But, they are generally brown or dark brown streaked on the back and breast. They have a whitish yellow stripe above the eyes, a pale or whitish median crown stripe, a rather short, notched tail, buff to white under parts with brown streaking, and pinkish legs and feet. Males and females are alike in color. Birds differ in physical characteristics due to where they are located. They are about 5.5 inches (14 centimeters) long, with a wingspan of about 6.75 inches (17 centimeters) and a weight of about 0.7 ounces (20 grams).



Savanna sparrows are found alone, in pairs, and in small family groups during the summer, but during migration and winter they are found in larger loose flocks. (Robert J. Huffman/Field Mark Publications. Reproduced by permission.)

Geographic range: They live along the west coast from southern British Columbia south to southern Baja California, along the west coast of Mexico, south to central Sinaloa, and in the highlands of central Mexico. During the winter, they migrate to the east coast of the United States, west through the central Plains, and south to northern Central America. They breed from northern Alaska, northern Canada (except for the arctic islands), south to northern Georgia, the central Great Plains, and south in the mountains to Guatemala.

Habitat: Savanna sparrows live in open areas, such as grassy and wet meadows, farm fields, pastures, roadsides, bogs, the edge of salt marshes, and tundra.

Diet: They eat insects, spiders, and a number of other invertebrates, seeds, and fruits in the summer, but forage mostly on seeds in the winter. They forage on the ground, low in bushes and weeds, and on beaches along the tide line and in piles of seaweed, terrestrial plants, and animal remains that wash ashore.

Behavior and reproduction: They are found alone, in pairs, and in small family groups during the summer, but during migration and winter they are found in loose flocks. The birds spend most of their time on the ground, usually hopping or running about. When disturbed, they scurry through grasses, only flying off a short distance as a last resort. At night, savanna sparrows roost on the ground in small huddled groups. Males are very territorial, and can be found singing from an exposed perch to warn intruders. They are strong fliers, usually flying in direct routes. Their song begins with two to three “chip” notes, followed by two buzzy insect-like trills “tip-tip-seeeee-saaaay.” Their general call is a thin “seep,” while their flight call is a high “tsiw.”

Savanna sparrows are usually monogamous, but males are sometimes bigamists (having two mates). Some marsh-dwelling species are polygynous. Nests are woven into the shape of a cup; made with grasses and other vegetation. Nests are made on the ground or in a slight depression that is partly covered by grasses or other vegetation. From February to August, females lay one to two clutches of two to six eggs. The incubation period is ten to thirteen days and the

fledgling period is seven to fourteen days. Both parents share in feeding and caring of young.

Savannah sparrow and people: There is no known significant relationship between people and savanna sparrows.

Conservation status: Savanna sparrows are common throughout most of their range, but are declining in eastern North America as their natural habitats are degraded or lost. The marsh-dwelling birds are Vulnerable because flooding, draining, and filling of marshes can rapidly change the environment. Pollution is particularly hurtful to the birds in agricultural lands. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

NEW WORLD WARBLERS

Parulidae

Class: Aves

Order: Passeriformes

Family: Parulidae

Number of species: 126 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

New World warblers are relatively small birds ranging from 4 to 7.5 inches (10 to 19 centimeters) long, although most are 4 to 5.5 inches (10 to 14 centimeters). They stand on thin, delicate-looking legs, typically have short and pointy beaks that are either slender or flat, but a few have heavier-appearing bills. Unlike all other songbirds, New World warblers have only nine primary feathers rather than ten. Many are colorful or boldly patterned, but the females' duller colors make them appear quite drab next to their striking male counterparts. The juveniles usually look much like the adult females, and males of some of the cooler-climate species also switch to a female-like, dull coloration in the fall and winter.

GEOGRAPHIC RANGE

New World warblers live in North America, South America, Central America, and the West Indies.

HABITAT

Primarily forest birds, different species of New World warblers, also known as wood warblers, may be found in everything from thick and dark forests to dry and open woods. Some have more unusual habits, and will live either in deserts or swamps.

DIET

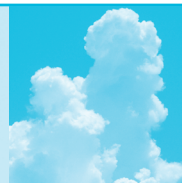
These smallish birds spend much of their days on the move and looking for insect meals. Using their slender beaks, the birds are skillful at plucking small insects and spiders from even very

tiny cracks and crevices in tree bark, between leaves, and from other hideaways. A few species add berries and seeds to their diets, and some even rely on those food sources to survive snowy winters. Most New World warblers scrounge for food on the ground or on plants or trees.

BEHAVIOR AND REPRODUCTION

Perhaps the most characteristic behavior, and the most frustrating for birders who are trying to spy one of the birds through their binoculars, is the nearly constant motion of New World warblers. No sooner do they land on a tree branch than they are off again to new destination. For this reason, plus the sometimes-dense woods that hide them from view, most birders in the field recognize different species of warblers not by sight but by their songs. Only the males sing, except in a few species when the females also join the chorus. Many species have lovely, bright songs, but others are merely loud, and some have quite quiet, scratchy voices that sound more like insects than birds. Each song, however, is characteristic to a particular species. By learning their songs, birders can walk into the woods and know which species are there without ever seeing a single bird. As in other birds, both males and females also communicate through various quick cheeps and chips, some of which may also be very distinctive to a particular species.

Most of the species that summer in North America migrate far south for the winter, sometimes flying 3,000 miles (4,800 kilometers) or more to a warm, sunny location. Usually, the birds leave their northern haunts in the fall, long before bitter temperatures settle in. Fall migration flocks can number in the thousands and include many different species of birds. The flocks travel from sunset to sunup. On a night with a full moon, a careful observer can sometimes spot the flocks as silhouettes against the surface of the moon. The birds return the following spring.



THE THREAT FROM COWBIRDS

Warbler numbers are declining in many areas due to the much larger brown-headed cowbird. Unlike a predator that directly attacks and kills warblers or eats their eggs, the cowbird's threat comes from its breeding habits. Instead of laying eggs in its own nest and raising its own young, the cowbird lays its eggs in other birds' nests and leaves the parenting to the adoptive parents. Unfortunately for the warbler, the small birds do not recognize the foreign egg and raise it as their own. Cowbird eggs are larger and typically hatch a bit earlier, which gives the young cowbird a distinct advantage over its smaller nest mates. Sometimes, the cowbird pushes the others out of the nest and to their death, but even the baby warblers that remain often miss out on feedings from their mother as the larger cowbird can push its beak to the front for meals. As a result, young warblers starve to death. The behavior of the cowbird is known as brood parasitism, because it actually becomes a parasite on the mother warbler's family, or brood.

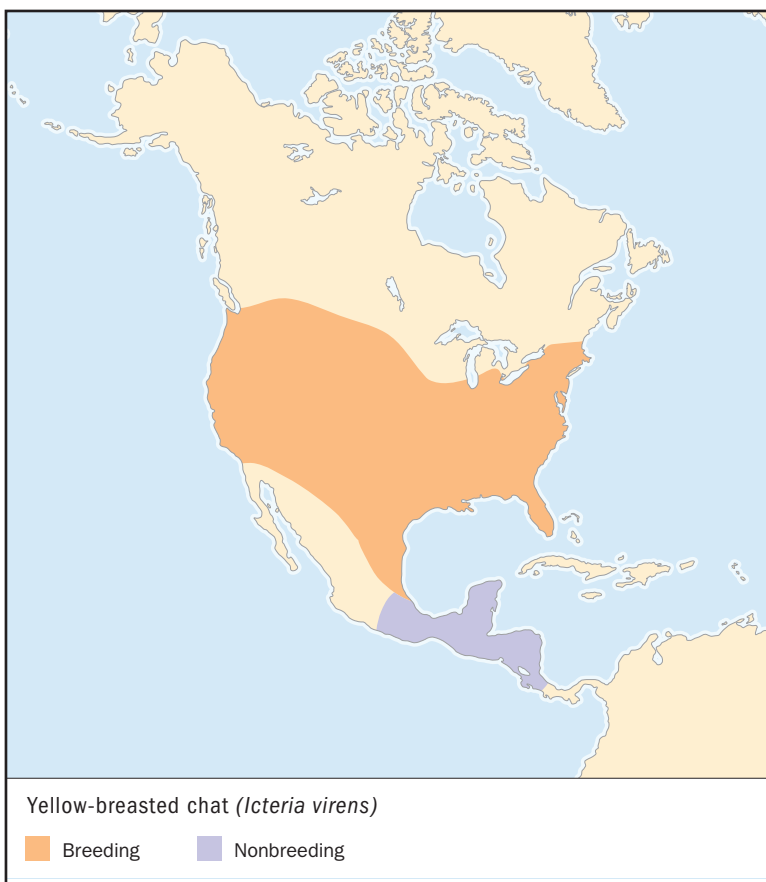
The male warblers usually arrive in the spring shortly before the females. The head start allows the males to set up their breeding territories. As the females arrive, the males begin singing to entice a mate. Once a pair forms, the warblers go about making a nest and preparing for egg laying. Some species make their typically cup-shaped nests on the ground, others in shrubs, and some high in the trees. A typical clutch is three or four eggs, which are usually white with irregular spots. The female sits on the eggs while the male dashes about finding food and bringing it back to her. When the eggs hatch nearly two weeks later, the mother helps the father find and deliver food to the babies. The young grow quickly, and are nearly adult weight by the time they are ten days old. At that point, they test their wings and leave the nest, but they don't go far. The parents continue to feed them, but since the young are no longer together in the nest, the mother generally takes care half the offspring, and the male feeds the other half. After a few weeks, the parents stop their care and the young birds are on their own.

NEW WORLD WARBLERS AND PEOPLE

Warblers have a special place in the hearts of birders and anyone else who enjoys a lilting song or a glimpse of color while walking outdoors. Some North American communities even have festivals to herald the return of the small birds each spring.

CONSERVATION STATUS

According to the Red List of the World Conservation Union (IUCN), three species are Critically Endangered, facing an extremely high risk of extinction; five are Endangered, facing a very high risk of extinction; seven are Vulnerable, facing a high risk of extinction; and eight are Near Threatened, in danger of becoming threatened with extinction. The U.S. Fish and Wildlife Service lists five endangered species: Bachman's warbler, Barbados yellow warbler, golden-cheeked warbler, Kirtland's warbler, and Semper's warbler. For the most part, a small breeding range and shrinking habitat are the primary threats to these species. When people undertake habitat-preservation efforts, however, the species generally respond favorably.



YELLOW-BREASTED CHAT

Icteria virens

SPECIES ACCOUNTS

Physical characteristics: The largest of the New World warblers, both male and female yellow-breasted chats have an olive-colored back, yellow throat and breast, and white belly. Eyes are ringed in white, and the blackish face has white stripes. The beak is larger and appears heavier than most other warblers. The bird reaches about 7.5 inches (19 centimeters) long.

Geographic range: Its breeding grounds are in southern Canada, the United States, and northern and eastern Mexico, and its wintering grounds in Central America.



The yellow-breasted chat is usually found near water, where it typically remains hidden from sight in thick brush. (Barth Schorre/Bruce Coleman Inc. Reproduced by permission.)

Habitat: Usually found near water, where it typically remains hidden from sight in thick brush.

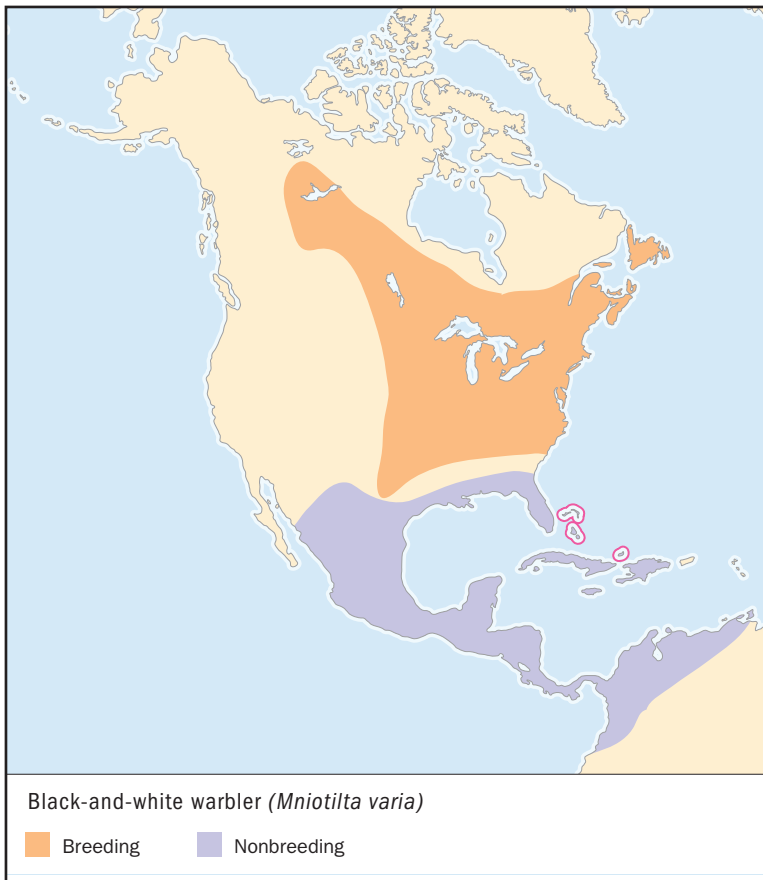
Diet: It mostly eats insects, but also snacks on berries on occasion.

Behavior and reproduction: This bird can often be heard flying and otherwise pushing its way through brambles and thickets. In addition to its typical daytime activities, this warbler also sometimes sings at night. The song is a mixture of caws, gobbles, and a few singsong phrases. Unlike other nesting pairs of warblers that are quite territorial, several chat pairs will sometimes share a single

nesting site. Their cup-shaped nests are tucked in thick brush. Eggs, which typically number up to six, are speckled with brown and purple.

Yellow-breasted chats and people: Seldom seen, but often heard, chats add to nature's outdoor symphony.

Conservation status: This species is not threatened. ■



BLACK-AND-WHITE WARBLER

Mniotilta varia

Physical characteristics: An appropriately named bird, this warbler has black and white stripes over much of its body. A male has a black patch on his throat, and a female has a grayish white patch on hers. Size ranges from about 4.5 to 5.5 inches (11.4 to 14 centimeters), and the bird weighs 0.3 to 0.5 ounces (9 to 15 grams).

Geographic range: The black-and-white warbler spends the warmer months in Canada and the eastern half of the United States, then migrates for the winter months to southern U.S., Mexico, West Indies, Central America, and northeastern South America.

Habitat: They tend to live in areas with numerous large trees, as well as a tall, thick understory. The trees provide a place for finding food, and the thickets provide a place to hide.

Diet: These birds eat caterpillars, flies, beetles, and other insects; and spiders.

Behavior and reproduction: It spends much of its time creeping up tree trunks in search of small insects and other creatures in the little openings and cracks in the bark. Its song is a quiet and short peeping phrase. These warblers migrate north a bit earlier than most other warblers, and soon begin breeding. They usually build their nests on the ground, although a few construct theirs in a

hidden spot just up the side of a tree trunk, and then use some carefully placed leaves to camouflage the nest. Each pair has four or five eggs that hatch in ten days. Predation on the ground nests by dogs, cats, raccoons, and other animals is common.

Black-and-white warblers and people: As with most warblers, its primary benefit to people is its beauty.

Conservation status: This bird is not threatened. ■



KIRTLAND'S WARBLER

Dendroica kirtlandii

Physical characteristics: This bird reaches about 6 inches (15.3 centimeters) and 0.5 ounces (15 grams). It has a dark, bluish gray back and head, white eye ring, and a gray-speckled, yellow throat and belly. Males are slightly more vividly colored than females, and have a blackish stripe on the face.

Geographic range: This bird summers in Michigan, and winters in the Bahamas.

Habitat: Its summertime home is primarily forests of jack pine trees, usually preferring forests with many young trees whose branches dip



Kirtland's warbler is listed as Endangered by the IUCN and the U.S. Fish and Wildlife Service. It spends the summer in Michigan and the winter in the Bahamas. (Richard Baetson. U. S. Fish and Wildlife Service. Reproduced by permission.)

close to the ground and provide cover for their ground nests.

Diet: Kirtland's warblers eat insects, and occasionally berries, or pine needles.

Behavior and reproduction: Although the warbler is quite rare, a birder who knows where to look can readily see them flying between pine trees and nabbing insects in midair. In late spring to early summer, Kirtland's warblers build small cup-shaped nests on the ground under low-lying pine branches. Broods typically number four or five eggs. The eggs hatch in about two weeks, and the young birds leave the nest about a week and a half later. One of greatest dangers to the birds

comes not from direct predation, but from the wily brown-headed cowbird, which lays its eggs in the warbler's nest. The warbler cares for the cowbird young, often neglecting its own chicks.

Kirtland's warblers and people: People from around the world come to Michigan in the spring and summer to spot this bi-colored bird. Kirtland Community College, located in the breeding area, holds an annual festival in the bird's honor.

Conservation status: The need for the Kirtland's warbler to breed in young jack pine stands in northern Michigan has contributed to its low numbers. In response, efforts to improve its habitat have occurred, and the number of breeding pairs is increasing. The U.S. Fish and Wildlife Service currently defines this species as endangered, but its ranking on the Red List has improved from Endangered in 1994 to Vulnerable in 2000. ■

FOR MORE INFORMATION

Bent, Arthur C. *Life Histories of North American Wood Warblers*. New York: Dover Publications, Inc., 1963.

Cassidy, James, ed. *Book of North American Birds*. New York: The Reader's Digest Association, Inc., 1990.

Dock Jr., George. "Yellow-Breasted Chat." In *Audubon's Birds of America*. New York: Harry N. Abrams, Inc., 1979.

Ehrlich, Paul R., David S. Dobkin, and Darryl Wheye. *The Birder's Handbook*. New York: Simon and Schuster, Inc. (Fireside Books), 1988.

Garrett, Kimball L., and John B. Dunning Jr. "Wood-Warblers." In *The Sibley Guide to Bird Life and Behavior*, edited by Chris Elphick, John B. Dunning Jr., and David Allen Sibley. New York: Alfred A. Knopf, 2001.

Peterson, Roger Tory. *A Field Guide to the Birds of Eastern and Central North America*. Boston: Houghton Mifflin Co., 1980.

Periodicals:

Berger, Cynthia. "Exposed: Secret Lives of Warblers." *National Wildlife* 23 (2000): 46–52.

Lichtenstein, G., and S. G. Sealy. "Nestling Competition, Rather than Supernormal Stimulus, Explains the Success of Parasitic Brown-headed Cowbird Chicks in Yellow Warbler Nests." *Proceedings of the Royal Society of London* 265, no. 1392 (2000): 249–254.

Price, T., H.L. Gibbs, L. de Sousa, and A. D. Richman. "Different Timing of the Adaptive Radiations of North American and Asian Warblers." *Proceedings of the Royal Society of London* 265 (1998): 1969–1975.

Weidensaul, Scott. "Jewels in the Treetops." *Country Journal* 23 (1996): 58–61.

Web sites:

Endangered Species Program, U.S. Fish & Wildlife Service. <http://endangered.fws.gov/> (accessed on May 5, 2004).

IUCN Red List of Threatened Species—Species information. <http://www.redlist.org> (accessed on May 29, 2004).

NEW WORLD BLACKBIRDS AND ORIOLES

Icteridae

Class: Aves

Order: Passeriformes

Family: Icteridae

Number of species: 103 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

New World blackbirds and orioles (called “icterids” as a group) are physically diverse in coloring, size, and shape. Common colorings are black, dark purple, yellow, brown, and orange. Bill size and shape is also variable—some species like the great-tailed grackle and the meadowlarks have long, curved beaks while others have shorter conical, or cone-shaped, ones. All blackbirds have a unique jaw structure that enables them to force their jaw and bill open, a practice known as gaping that lets them forage, or search for food, more effectively.

GEOGRAPHIC RANGE

As their name implies, New World blackbirds are found throughout North and South America, as are orioles. Some species are also found in the Caribbean.

HABITAT

Grasslands and marshes are popular breeding grounds for icterids, but this diverse family of birds can be found in a number of different biomes.

DIET

Birds in the Icteridae family have a diverse diet, feeding on insects, seeds, fruits, and grains.

BEHAVIOR AND REPRODUCTION

Blackbirds build their bowl-shaped nests in shrubs, trees, and reeds, with the exception of a few species that live in

vegetation-free areas that build nests in rock crevices. Orioles build orb-shaped nests constructed of grasses that hang down from a tree branch. One species of Icteridae, the baybird, takes over abandoned nests of other birds. Others are parasitic, meaning that they lay their eggs in another bird's nests for the nest-owner to hatch and fledge, when the young bird is ready to fly on its own.

Depending on the species, male blackbirds have anywhere from one to up to fifteen female mates. Often those male birds that are polygynous (puh-LIJ-uh-nus; have more than one mate) live with a bird population that is mostly female.

BLACKBIRDS, ORIOLES, AND PEOPLE

Because of their large and loud flock sizes and their feeding on agricultural crops such as rice, sunflowers, and corn, many people consider blackbirds and orioles pests.

CONSERVATION STATUS

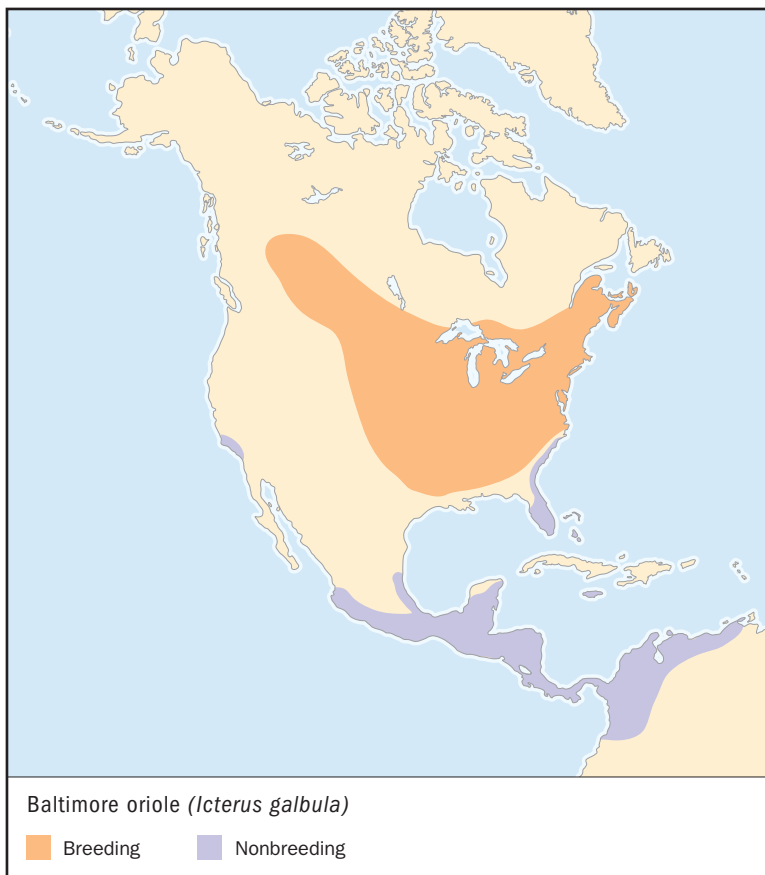
One species—the slender-billed grackle—is extinct, or has died out. Three more species of Icteridae are Critically Endangered, facing an extremely high risk of extinction in the wild; and four are considered Endangered, facing a very high risk of extinction.



STRENGTH IN NUMBERS

As the breeding season ends, red-winged blackbirds take to the skies in enormous flocks that can contain tens to hundreds of thousands of birds. They share the skies with other species of blackbirds and starlings, and forage for food together. The size of these flocks helps protect them from predators, animals that hunt them for food, and keeps them protected from the elements. Roosting flocks can be even larger than foraging flocks, and may number over a million birds.

SPECIES ACCOUNTS



BALTIMORE ORIOLE *Icterus galbula*

Physical characteristics: The Baltimore oriole has a black back, head, and throat and a yellow to orange belly, rump, and shoulders. Wings are black with white-edged feather tips, and the tail has yellow or orange markings. The species is sexually dimorphic in color, meaning that males and females have different color patterns; males are bright orange and jet black, while females are yellow and brown. The female also has two white wingbars, as opposed to one on the male. Average length is 8.75 inches (22.23 centimeters) with a wingspan of 11.5 inches (29.21 centimeters) and a weight of 1.2 ounces (33 grams).

Geographic range: In the summer breeding months the Baltimore oriole can be found in eastern North America, from Alberta to Newfoundland in Canada and from the Dakotas to Maine in the United States. Their range runs south to Texas, Louisiana, and Georgia. Some birds winter in the U.S. in parts of Florida, California, and the Caribbean; the rest migrate to Mexico, Central America, and northern South America.

Habitat: Baltimore orioles prefer wooded areas, and build their nests high from the ground. In the fall they migrate south to tropical climates.

Diet: Eats insects (especially caterpillars), berries, and fruit. They also will feed on human-provided foods such as suet, jams and jellies, and sugar-water in hummingbird feeders.

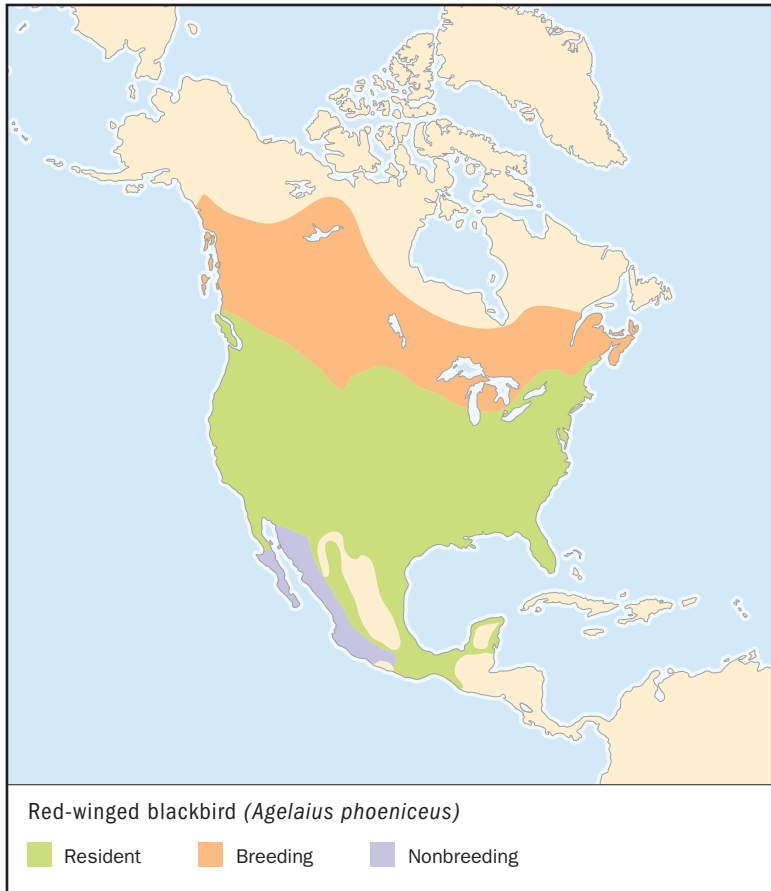
Behavior and reproduction: Baltimore orioles breed in monogamous (muh-NAH-guh-mus) pairs, with one male and one female. The male attracts a mate by singing, chasing, and showing off his plumage. Females weave basket-like nests of grass and plant and human-made fibers that hang from tree branches. They lay eggs in average clutches of four to five eggs, which hatch in approximately two weeks. Both mother and father feed the hatchlings until they leave the nest after two weeks.

Baltimore orioles and people: Because of their bright plumage and loud, clear song, Baltimore orioles are considered desirable neighbors to many people. The birds also help control the population of insects that are destructive to vegetation, like gypsy moth caterpillars and grasshoppers.

Conservation status: Baltimore orioles are not threatened. ■



Female Baltimore orioles weave basket-like nests of grass and plant and human-made fibers that hang from tree branches. (© Gregory K. Scott/Photo Researchers, Inc. Reproduced by permission.)



RED-WINGED BLACKBIRD

Agelaius phoeniceus

Physical characteristics: The male red-winged blackbird can be identified by the yellow-bordered red patches on the shoulder portion of the wing. While the adult male is a glossy black with black bill and feet, the adult female is streaked or striped with shades of brown and white. She is marked with a white stripe across her eye, a buff colored throat, and a faint orange patch on her shoulder. Birds don't attain their full adult coloring until they are three years old. Average size is 8.75 inches (22.23 centimeters) in length with a wingspan of 13 inches (33.02 centimeters) and a weight of 1.8 ounces (52 grams).



The male red-winged blackbird can be identified by the yellow-bordered red patches on the shoulder portion of the wing. The adult female is streaked or striped with shades of brown and white. (George J. Sanker/ Bruce Coleman Inc. Reproduced by permission.)

Geographic range: Like other New World blackbirds, the red-winged blackbird has an extensive North and South American range. The birds breed throughout Canada, the entire contiguous United States, and in southeastern Alaska all the way southward through Central America. They spend their winters as far north as southern Canada and south through Costa Rica. Some southern subspecies, population groups, are non-migratory.

Habitat: During breeding season red-winged blackbirds favor areas with tall vegetation such as marshes or grassland. They weave their nests into reeds or other vegetation to prevent access by predators. Wetlands also provide ample insects for feeding. In nonbreeding season, they descend on agricultural crops in large flocks.

Diet: Insects are the red-winged blackbird's staple during the summer months, but after breeding season they forage for grains and seeds.

Behavior and reproduction: Red-winged blackbird males mate with multiple females. Males are very territorial and will vigorously defend their space. Females select their mates based on the quality of the territory they have secured for nesting. Behaviors such as chasing, singing, and a “song spread” (in which the male sings loudly, spreads his wings, and puffs out his brightly colored epaulets, or shoulder feathers) are used by male birds to attract a mate. Interestingly, these same behaviors are also used to defend breeding territory from other males once it has been established.

The species travels and roosts with other types of blackbirds and starlings when they are not breeding, in flocks that can sometimes number in the hundreds of thousands.

Red-winged blackbirds and people: Because of their love of grains, rice, and seeds, the red-winged blackbird is considered a nuisance to many farmers. Crops for human and livestock consumption are frequently scavenged by large flocks of blackbirds. The United States Department of Agriculture estimates that sunflower growers in both North and South Dakota lose an estimated \$4 to 7 million annually to blackbird damage to their crops. The USDA has used several pilot programs to try and reduce crop damage in recent years, including avicide (bird poisoning) programs, herbicide destruction of desirable red-winged blackbird habitat (such as cattail stands), and use of protective aerial lines over crops.

Conservation status: Despite concerted efforts to reduce their population, the red-winged blackbird continues to thrive in abundance. ■



BAYWING

Agelaioides badius

Physical characteristics: The baywing, sometimes called the bay-winged cowbird, is a small olive-gray bird. Wings are chestnut with black markings, and the bill, feet, and tail are black as well. Average size is about 7 inches (18 centimeters) in length and 1.4 to 1.8 ounces (41 to 50 grams).

Geographic range: A year-round resident of South America, the baywing is found in parts of Bolivia and Argentina, northeastern Brazil, Paraguay, and Uruguay.

Habitat: Baywings are found at higher altitudes, up to 9,500 feet (2,880 meters), and favor scrub or wooded terrain.

Diet: Baywings eat primarily insects.

Behavior and reproduction: Instead of building their own nests, baywings typically take over abandoned nests of other birds (although some will either build their own cup-shaped nests or dwell in woodpecker holes). They are frequent victims of screaming cowbirds, a brood parasite species that lays their eggs in other birds' nests for incubation and fledging. It is thought that baywings lay clutches of four to five eggs.

Baywings and people: Baywings are not considered agricultural pests and enjoy a harmonious relationship with people.

Conservation status: Baywings are not a threatened species. ■

FOR MORE INFORMATION

Books:

George, Phillip Brandt. "Blackbirds, Orioles." In *Reference Atlas to the Birds of North America*, edited by Mel Baughman. Washington, DC: National Geographic Press, 2003.

Jaramillo, Alvaro, and Peter Burke. *New World Blackbirds: The Icterids*. Princeton, NJ: Princeton University Press, 1999.

Sibley, David Allen. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Periodicals:

Harrison, George. "The Lord and Master: The Flashy Red-winged Blackbird is a Joyful Songster, a Master Weaver, and One of Our Most Easily Recognized Birds." *Birder's World* (February 2003): 42–5.

Web sites:

Cornell Lab of Ornithology. "Baltimore Oriole." All About Birds. http://birds.cornell.edu/programs/AllAboutBirds/BirdGuide/Baltimore_Oriole_tl.html (accessed on May 28, 2004).

Cornell Lab of Ornithology. "Red-winged Blackbird." All About Birds. http://birds.cornell.edu/programs/AllAboutBirds/BirdGuide/Red-winged_Blackbird.html (accessed on May 28, 2004).

United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services. "Development and Evaluation of Management Techniques for Reducing Blackbird Damage to Ripening Sunflower Crops and to Feedlots." National Wildlife Research Center. <http://www.aphis.usda.gov/ws/nwrc/research/sunflowers/> (accessed on May 29, 2004).

FINCHES

Fringillidae

Class: Aves

Order: Passeriformes

Family: Fringillidae

Number of species: 137 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

The family Fringillidae consists of “true” finches that are small- to moderately large-sized birds with a compact body, a short, conical-shaped bill, strong skull, and a peaked head with large jaw muscles. They have easily seen shoulder patches, a short neck, plumage (feathers) that vary from dull to colorful, nine small outer primary feathers on their wings that are hidden by wing coverts (small feather around quill base), and a long tail with twelve feathers. Finches are 3 to 10 inches (7.6 to 25.4 centimeters) long and weigh between 0.3 and 2.1 ounces (8 and 60 grams).

GEOGRAPHIC RANGE

Finches range throughout the Americas, Europe, Asia, and Africa.

HABITAT

They prefer forests, shrubby areas, savannas (flat grasslands), grasslands, agricultural areas, parks, and gardens.

DIET

Finches eat seeds, grains, and other vegetable matter. They also eat insects and other small invertebrates (animals without a backbone). Many species forage on the ground, while others feed in trees.

BEHAVIOR AND REPRODUCTION

Finches are strong fliers, and able to hop and run over short distances. Some species migrate long distances to warmer

climates, while others wander constantly in search for food. Finches are mostly quiet birds, but do have short, sharp calls that are used to communicate and to warn of predators. Males use unique songs to defend a large breeding territory and to attract a mate. Because finches are spread out throughout the world, songs vary widely.

Female finches build cup-shaped nests of grasses and other plant fibers. Nests are constructed in trees, shrubs, or rocky crevices. Most species breed as a mating pair, but others form small family groups. Once the male and female bonds, they are monogamous (muh-NAH-guh-mus; one mate) for the breeding season. Females lay two to six eggs, which vary with respect to species as to color and markings. The eggs are incubated (kept warm for hatching) usually by the female, but sometimes by both parents, which also take care of young.

FINCHES AND PEOPLE

Many species have been captured and bred as cage-birds or pets because people like their beautiful songs, attractive plumage, and habits.

CONSERVATION STATUS

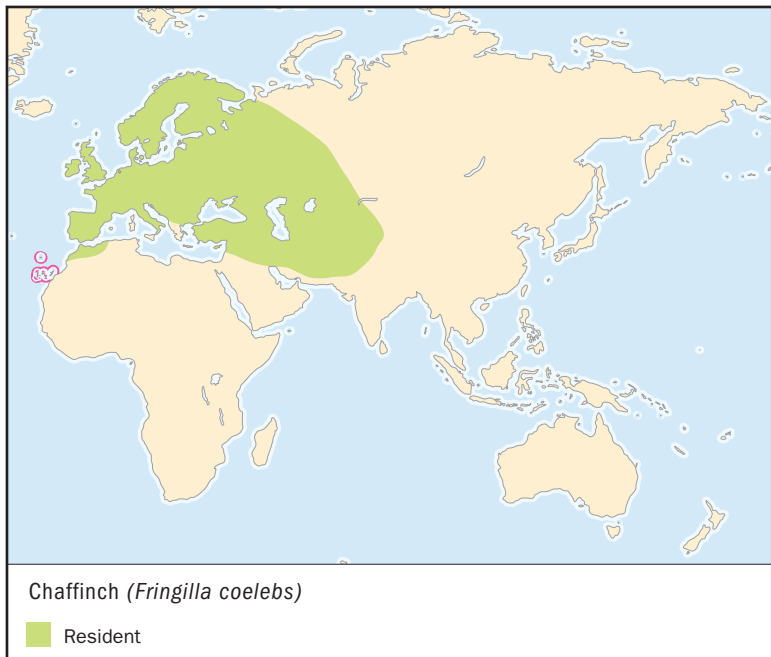
One species is listed as Critically Endangered, facing an extremely high risk of extinction; five species are Endangered, facing a very high risk of extinction; three species are Vulnerable, facing a high risk of extinction; four species are Near Threatened, in danger of becoming threatened with extinction; and one species is Extinct, died out.



BILLS FOR SHELLING SEEDS

Finches have a bill suited for shelling seeds. Each seed is wedged in a special groove on the side of the palate (roof of the mouth) and crushed by raising its lower jaw onto it. The shell husk is then peeled off with the tongue, releasing the kernel. The bird throws away the husk, and the kernel is taken off with its tongue and swallowed.

SPECIES ACCOUNTS



CHAFFINCH *Fringilla coelebs*

Physical characteristics: Chaffinches have a white shoulder patch, a white wing-bar, and white tail markings. Males are patterned with a blue-gray back and front of head, a pink-to-rust face, throat, breast, and sides, a gray-green rump, a white belly, flanks, and undertail coverts, and a gray-blue tail. Females are duller with a yellow-brown overall color, a paler colored belly, a brown eye line, and light olive-brown upperparts. Color variations and streaking patterns occur because of wide geographical range. Adults are about 6 inches (15.2 centimeters) long, with a wingspan of about 9.5 inches (24.1 centimeters).

Geographic range: Chaffinches are widely spread throughout most of Europe, across the Middle East, through the Ukraine and western Russia to Afghanistan, and in North Africa, the Canary Islands, and the Azores.

Habitat: They are found in a variety of woodlands and open forests, urban and suburban parks and gardens, and fields with hedgerows.

Diet: Their diet consists of seeds (including pine) and fruits. Young chaffinches are fed insect larvae (LAR-vee), caterpillars, butterflies, moths, and other invertebrates, which are brought up from the stomachs of parents as partially digested food. They feed from trees and bushes.

Behavior and reproduction: Chaffinches are found alone or in pairs during the nesting season, and in groups and small flocks after breeding. They are migratory birds and females prefer to migrate farther south than males. Their song is a bold warbling such as “fyeet, fyeet, lya-lya-vee, chee-yew-keak.” Their call is a “pink-pink” and their flight call is “cheup.” Chaffinches build well-hidden, cup-shaped nests of grasses and lichens. Nests are neatly constructed in trees or shrubs that are near to trunks or large branches. The incubation period (time sitting on eggs) is ten to sixteen days, only done by the female. One to two broods (young born and raised together) are raised each year by the pair (mostly by female).

Chaffinches and people: People enjoy chaffinches for their beauty and song both in residential and agricultural areas. They have been kept as pets for their beautiful singing.

Conservation status: Chaffinches are not threatened. They are widespread and abundant throughout their habitat. In fact, they have grown in numbers as their native habitats of forests have been turned into urbanized and agricultural lands, but only when such areas contain trees, shrubs, and hedgerows. ■



Chaffinches are found in a variety of woodlands and open forests, urban and suburban parks and gardens, and fields with hedgerows. (Illustration by Barbara Duperron. Reproduced by permission.)



AMERICAN GOLDFINCH

Carduelis tristis

Physical characteristics: Male American goldfinches are colored an overall bright canary yellow, with black wings marked in double white bars and white edging, a black tail, and a black face cap. Males are not as brightly colored in the winter. Females are a dull grayish-yellow, with dark wings and tails, pale yellow under parts without a black cap, and olive upper parts. Juveniles are olive-yellow, with darker wings. Adults are 4.3 to 5.0 inches (10.9 to 12.7 centimeters) long and weigh about 0.5 ounces (14 grams). Their wingspan is 8.8 to 9.0 inches (22.4 to 22.9 centimeters) long.



Male and female American goldfinches feed their young after they've hatched.
(© Anthony Mercieca/Photo Researchers, Inc. Reproduced by permission.)

Geographic range: American goldfinches breed throughout most of southern Canada and the northern half of the United States. It winters in extreme southern Canada, through most of the United States, and northern Mexico.

Habitat: American goldfinch is one of the most common birds in the United States, usually seen in parks, farms, and suburban gardens. They inhabit open, mixed-species forests, and shrubby areas. They winter in shrubby habitats, old fields, and parks and gardens.

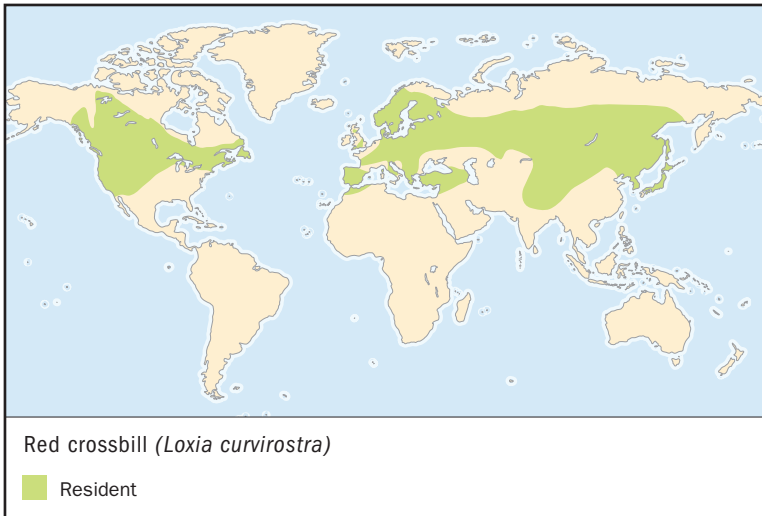
Diet: Their diet consists of small seeds and grains, especially liking plants in the aster family, including sunflower, lettuce, and thistles. They also eat insects.

Behavior and reproduction: American goldfinches fly with a very unique bounding flight. They are migratory birds, and social during the nonbreeding season when they are often found in large flocks, usually with other finches. The birds breed in loose colonies (bird groups that live together and are dependent on each other). Their courtship rituals include daring maneuvers and singing by males. Males court when their bright plumage appears. Their song is a series of musical warbles and trills, often with a long “baybee” note. When flying, they sing songs like “per-chick-oree” or “po-tato-chips.”

Monogamous American goldfinches begin to breed around the middle of June in their northern habitat, while in southern climates, they breed as early as March and continue through July. They defend a nesting territory. Most mating pairs raise only one brood each year. They build small cup-shaped nests that are woven with grasses and other plant fibers. Nests are placed in large thistles, other tall weeds, shrubs, or trees. Females lay four to six pale bluish white eggs. The incubation period is ten to twelve days, performed only by females. Both mates feed their young with a fledgling period lasting eleven to seventeen days. Young spend the fall following their parents. One to two broods occur each year.

American goldfinches and people: People find American goldfinches to be very popular birds to watch. It is the state bird of Iowa, New Jersey, and Washington.

Conservation status: American goldfinches are not threatened. They are widespread throughout their geographical range. However, their numbers have been decreasing during recent decades mostly due to habitat loss through developing their native lands for urban and agricultural uses. ■



RED CROSSBILL

Loxia curvirostra

Physical characteristics: Red crossbills show much geographic variation in body size, and in bill size and shape, but not in color. They have a fairly heavy body (about the size of sparrows), a short forked tail, and a stout bill where the tips of the upper and lower mandibles (parts of bill) cross over. Males are colored an overall dusky brick red with dusky wings that have reddish edging, and a dusky black tail that is short and notched. The undertail coverts are dark with whitish edging, while the belly is whitish gray. Females are gray tinged with dull green, brightest on rump, with darker (dusky black) wings. Juveniles have weakly crossed mandibles, gray-olive upper-parts, whitish under parts that are streaked with dark brown and washed with yellow, and a buff-yellow rump. Adults are 5.3 to 6.5 inches (14.0 to 16.5 centimeters) long and weigh about 1.4 ounces (40 grams). Their wingspan is 10.0 to 10.8 inches (25.4 to 27.4 centimeters) long.

Geographic range: Red crossbills range through the boreal and montane forest regions of both North America and Eurasia. They are found from coast to coast on both continents, breeding from southern Alaska, Manitoba, Quebec, and Newfoundland, south in west to northern Nicaragua, in eastern United States to Wisconsin and North Carolina.

Habitat: Red crossbills are mostly found in pine-containing conifer forests.

Diet: Their diet consists of conifer seeds mostly from the tree but sometimes off the ground, especially liking pine seeds. They remove seeds with its crossed bills and flexible tongue. The birds also eat insects and caterpillars.

Behavior and reproduction: Red crossbills are very social birds, especially during their nonbreeding season when they are found in large flocks. They sing a series of two-note phrases followed by a trilled warble, such as “jitt, jitt, jitt, jiiaa-jiia-jiiaaaa,” “chipa-chipa-chipa,” and “kip-kip-kip.” The birds defend their territory with a repeated series of simple chirps as they fly around. During courtship, males fly above a female while vibrating wings and singing. Breeding pairs are monogamous. Females build saucer-shaped nests of twigs, grass, bark strips, and rootlets. Nests are lined with finer grasses, fur, feathers, hair, and moss, located near the end of conifer branches, and 6.6 to 40.0 feet (2 to 12 meters) off the ground. Females lay three to four light green-blue eggs that are spotted with brown and lilac. The incubation period is twelve to eighteen days. Only females incubate. The helpless newborns are brooded by the female and fed by both parents. The fledgling period is fifteen to twenty days. One to two broods occur each year.

Red crossbills and people: There is no known significant relationship between people and red crossbills.

Conservation status: Red crossbills are not threatened. They are abundant throughout their range, but some species are declining in numbers due to human activities such as logging operations. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

Web sites:

Adkisson, Curtis S. "Red Crossbill." *The Birds of North America*, No. 256, 1996 (Cornell University). <http://birds.cornell.edu/birdsofna/excerpts/crossbill.html>.

HAWAIIAN HONEYCREEPERS

Drepanididae

Class: Aves

Order: Passeriformes

Family: Drepanididae

Number of species: 51 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Hawaiian honeycreepers are a group of birds with very unique appearances. The Drepanididae family is divided into three groups: Hawaiian finches, seed-eaters with thick finch-like bills and songs similar to the cardueline finches; Hawaiian creepers and relatives, including nukupuu, generally green-plumaged (feathered) birds with thin bills that feed on nectar and insects; and mamos, iiwis, and relatives, red plumaged birds that feed on nectar and sing songs of squeaks and whistles.

Hawaiian honeycreepers are small- to medium-sized birds that are often mistaken for finches. They have a compact body and a relatively straight to greatly curved bill, with the wide variation of bill sizes and shapes due to the type of food eaten (some have finch-like bills adapted to feeding on seed pods, while many others have pointed or curved bills in order to forage (search for food) for insects and nectar). They have nine large primary feathers on each wing (with a tenth primary feather that no longer functions and has mostly disappeared), and a tube-like tongue (in most species) with a fringed tip that is adapted to nectar feeding. Plumage comes in a wide variety of colors from dull olive green to brilliant yellow, crimson, and multi-colors. Male Hawaiian honeycreepers are often more brightly colored than females.

GEOGRAPHIC RANGE

Hawaiian honeycreepers are found only on the Hawaiian Islands. They are believed to have descended from a single

species of cardueline finch that came to the Hawaiian Islands (it is believed) about three to four million years ago.

HABITAT

Most Hawaiian honeycreepers live in forests, which range from mostly dry to very wet (tropical and semi-tropical) climates. A few species live on small, treeless islets (small islands).

DIET

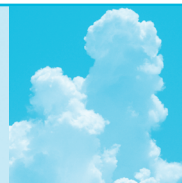
Hawaiian honeycreepers eat almost anything that is edible. They commonly eat nectar, insects, spiders, slugs, land snails, fruits, seeds and seed pods, tree sap, seabird eggs, and carrion (decaying animals). The flowers of the native plant *Metrosideros polymorpha* are especially liked by a number of nectar-eating Hawaiian honeycreepers.

BEHAVIOR AND REPRODUCTION

All Hawaiian honeycreepers are diurnal (active during the day). They forage mostly alone and in family groups, but some species feed in mixed flocks. Breeding pairs form strong bonds, and such pairings result in monogamous (having one mate) behaviors for most species. They have a wide range of calls and songs, sometimes described as canary-like. Songs and calls vary sometimes even within a species. Territories for nesting and feeding are often defended aggressively by some species. Other species tolerate visitors into their area. Territories are 1.0 to 1.5 acres (0.4 to 1.0 hectare) in area. Breeding takes place usually from May through July but can go from January to August. The mating pair builds a simple, open cup-shaped nest of grasses, twigs, lichens, rootlets, and other plant materials that is lined with fine fibers and found usually on tree branches. Hatchlings (newborn birds) are born naked, blind, and helpless. Only the female incubates (sits on) the young, but the male feeds the brooding female (mother-bird that gives birth and raises her young) and the young.

HAWAIIAN HONEYCREEPERS AND PEOPLE

Hawaiian honeycreepers pollinate (fertilize) native plants and keep the insect population under control, much to the



HUNTING RED FEATHERS OF APAPANES

Apapanes were captured by early Hawaiian natives in order to pluck some of their feathers for use in various cultural purposes. Expert hunters mixed a sticky paste made from the sap of the breadfruit tree, applied it on tree limbs, and then caught the stuck birds (who were attracted to the sap) with nooses, fiber nets, or their bare hands. Only a feather or two was taken, so the birds were often released if the bird was too small to eat. The feathers would eventually grow back.

benefit of people. They also attract tourists to Hawaii who enjoy watching the colorful birds.

CONSERVATION STATUS

Seven species are listed as Critically Endangered, facing an extremely high risk of extinction; five are Endangered, facing a very high risk of extinction; and three are Vulnerable, facing a high risk of extinction. Sixteen species of Hawaiian honeycreeper have become extinct in the recent past, mostly since the arrival of the Polynesians who introduced rats, and later other species of rodents and the mongoose. All species have been hurt, and continue to be hurt, by various degrees with respect to loss of habitat, introduction of diseases, and invasion of introduced predators, animals that hunt them for food. Many conservation programs are currently under way to protect most of the species.



APAPANE

Himatione sanguinea

SPECIES ACCOUNTS

Physical characteristics: Apapanes have bright crimson plumage, along with black wings and tails, a white undertail and abdomen, and a long, down-curved bill. They are about 5.25 inches (13.3 centimeters) long and weigh between 0.50 and 0.56 ounces (14 and 16 grams).

Geographic range: Apapanes are found in ohia lehua rainforests (forests that contain ohia lehua trees) of Hawaii. They commonly range in forested areas over 3,300 feet (1,000 meters) in elevation on Hawaii, Oahu, and Kauai. They are very rare or extinct on Lanai and Molokai.

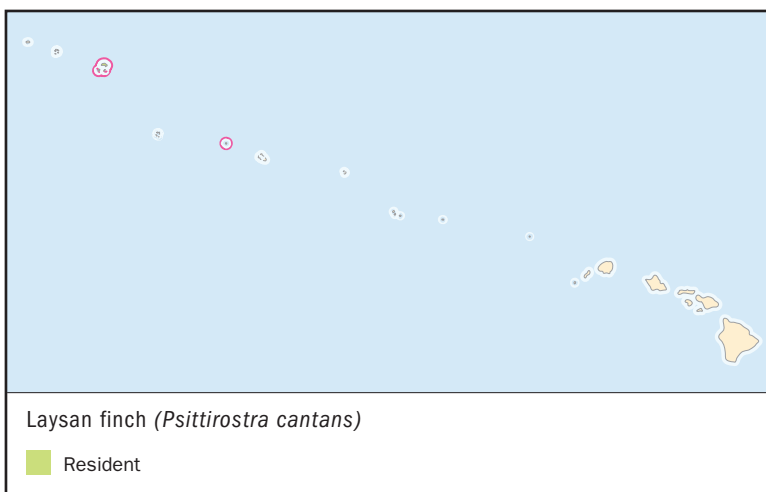
Habitat: They inhabit forests over 3,300 feet (1,000 meters) in elevation.

Diet: Nectar makes up the main part of the diet of the apapane species, which is found on the flowering ohia trees. They also feed on insects that are found close to these flowering trees. The birds fly between forest patches of the trees, finding ones that are blooming. Apapanes feed in large flocks of the species, numbering as many as 3,000 individuals per 0.4 square miles (1 square meters) of area.

Behavior and reproduction: The social birds gather in large flocks and fly about forests in search of blooming ohia trees. Their calls include whistles, squeaks, raspings, clickings, and trillings. Their blunt wing tips make loud and distinctive noises while flying. They breed throughout the year, but primarily from February to June, which is the months where ohia nectar is most available.

Apapanes and people: There is no known significant relationship between people and apapanes. Early Hawaiian natives used the red feathers of the apapanes for their feather capes, kahilis (works of art), and helmets.

Conservation status: Apapane are not threatened. They are the most abundant species of Hawaiian honeycreeper. ■



LAYSAN FINCH

Psittirostra cantans

Physical characteristics: Laysan finches have a large parrot-like (heavy, hooked) bill with the tip of the upper mandible (top part of a bird's bill) forming a tiny downward hook. Adult males have a bright yellow head, throat, and breast, and a gray collar around the neck. They have a grayish brown lower back and rump, and a whitish abdomen. Females are less colorful, with dark streaks in a yellowish crown, a gray collar, a yellowish throat and breast, some streaking on the flanks, and dark brown spots along the back. They are 6.0 to 6.5 inches (15 to 18 centimeters) long.

Geographic range: They are found on Laysan Island in the northwestern Hawaiian Island chain. A small population, which was introduced, exists on Pearl and Hermes Reef (a coral atoll). Both locations are part of a long series of islets northwest of the main Hawaiian Islands.

Habitat: Laysan is a low-lying, sandy island about 1,000 acres (405 hectares) in area that contains no trees but plenty of shrubbery and grasses. Pearl and Hermes Reef is a coral atoll containing several small islands.

Diet: Laysan finches are omnivorous (eating both animals and plants), eating such foods as carrion (decaying animals), various

invertebrates (animals without a backbone) such as insects, roots, sprouts, soft parts of plants and seeds, and seabird eggs (including the interiors of tern eggs). With respect to tern eggs, Laysan finches puncture their eggshells with its bill in order to get to the food inside.

Behavior and reproduction: Laysan finches are lively and sociable birds. They are very curious and have no fear of humans, often even letting people to feed them from their hands. Males gather at the start of the breeding season in order to make courting displays toward females. Their song is a complex, canary-like warbling. They make cup-shaped nests from grasses and twigs and place them in clumps of grass or in small bushes.

Laysan finches and people: Wildlife biologists have made strong efforts to preserve the species, and to study the evolution of the species.

Conservation status: Laysan finches are listed as Endangered by the U.S. Fish and Wildlife Service (USFWS) and the State of Hawaii, and as Vulnerable by the World Conservation Union (IUCN). They are often injured or killed by violent storms and the increasing numbers of introduced species of animals that compete with them on their limited habitat. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

Web sites:

"Hawaiian Honeycreepers: Family Drepanididae." Southwestern Adventist University, Department of Biology, Keene, Texas. <http://biology.swau.edu/faculty/petr/ftphotos/hawaii/postcards/birds/> (accessed on July 20, 2004).

WAXBILLS AND GRASSFINCHES

Estrildidae

Class: Aves

Order: Passeriformes

Family: Estrildidae

Number of species: 129 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Waxbills and grassfinches, commonly called weaverfinches, are relatively small, often brightly colored birds with large, cone-shaped bills. Projections (or swellings) of thick connective tissue, which are located at the edges of the bill and at the gape (width of the open mouth), are one of the weaverfinches most interesting features. The projections are colored a bright white, blue, or yellow, and often edged with black. Their plumage (feathers) often blends in with their environment, but can still be quite colorful. Adults are 3.5 to 6.7 inches (9 to 17 centimeters) long, with a wingspan of about 6 inches (15 centimeters).

GEOGRAPHIC RANGE

They are found in sub-Saharan Africa, southeastern Asia, Australia, and South Pacific islands. Various small populations have been introduced throughout other parts of the world.

HABITAT

Weaverfinches are found in savannas (flat grasslands), forests, and semi-deserts, preferring forest edges.

DIET

Their diet consists of small half-ripe and fully ripe grass seeds, and during the breeding season they also eat arthropods (invertebrate animals with jointed limbs). Ants and termites are eaten at the beginning of the rainy season. They often dash out from a perch to grab an insect and then return to the same perch.

BEHAVIOR AND REPRODUCTION

Weaverfinches are highly social birds that maintain strong bonds between the mating pair and among members of small flocks. They often perch in close contact with each other, often preening each other (grooming feathers with the bill). Males do a dance for females where they sing and either hop toward the female, or perform bows or stretching movements while hopping about in front of the female. If interested, females will cower on a branch and tremble her tail (that is, shake it slightly while keeping the wings still).

The song of weaverfinches is usually soft. Weaverfinches do not use songs to defend their territory or show aggression. The short song often sounds unpleasant, and is usually heard only by a nearby female as part of the courtship ritual. Songs are learned while in the fledgling period (time necessary for young bird to grow feathers necessary to fly).

Nests of weaverfinches are often roofed over, and shaped like a sphere (ball) with a diameter of 4 to 8 inches (10 to 20 centimeters). Many species attach a long tube to the nest that is used as an entrance. Males gather the nesting materials that consist of fresh or dry grass stalks, coconut fibers, animal hair, and feathers (for the nest itself) and feathers and other soft materials (for the lining). Females weave very complex nests, which is often also used for roosting during the nonbreeding season. Nests are usually placed in bushes or low trees, but can be found on the ground, hanging between reeds or grass stalks, or in tree holes.

Females lay four to six eggs, but once in awhile can lay up to nine eggs. Both sexes incubate (sit on and warm) eggs and brood (raise) young. During the day they switch sitting on the eggs around every one and one half hours, but at night both parents sit on the eggs together. Males often give brooding females a bit of grass or feather. The incubation period (time that it takes to sit on and warm the eggs before they hatch) is twelve to sixteen days. The young eat half-ripe seeds that are regurgitated (food brought up from the stomach) by the parents into their open mouth. The nestling period (time necessary to take care of young birds unable to leave nest) lasts about twenty-one days. Even after the young leave the nest, parents will direct the young birds back into the nest for sleeping and eating. They still take food from the parents from one to two weeks after fledging (first time that young are able to fly away from the nest). Many weaverfinches reach breeding age before

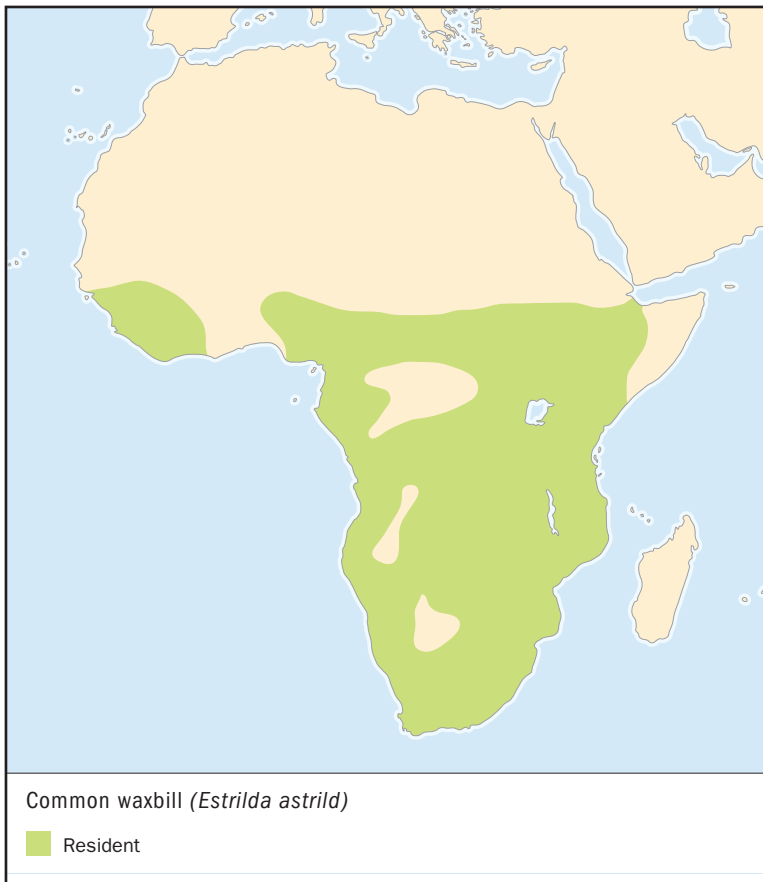
their first birthday, sometimes even before they molt from their juvenal (present while a juvenile, young) plumage.

WEAVERFINCHES AND PEOPLE

Weaverfinches are often kept in aviaries (large cages) where a mixed group of different species and colored birds are kept in the same environment. Many species such as the Java sparrow, the zebra finch, and the gouldian finch are domesticated species.

CONSERVATION STATUS

Two species of weaverfinches are listed as Endangered, facing a very high risk of extinction; eight species as Vulnerable, facing a high risk of extinction; and six species as Near Threatened, in danger of becoming threatened with extinction.



COMMON WAXBILL

Estrilda astrild

SPECIES ACCOUNTS

Physical characteristics: Common waxbills are mostly fawn in color, with upperparts that are darker than lower parts, a striped body, red bill, and a red stripe from the bill across the eye to the ear. Males and females look alike, having the same colors. Juveniles look paler than adults and with fainter barring. Adults are 4.3 to 5.1 inches (11 to 13 centimeters) long.

Geographic range: They are found generally in southern Africa, specifically in southern Senegal, east to Ethiopia, south to South Africa, and generally throughout most of sub-Saharan Africa. They have been introduced in Portugal, Brazil, and many islands throughout the world,

including Hawaii, Amirantes, Tahiti, Rodriques, Reunion, Mauritius, St. Helena, the Seychelles, Puerto Rico, and Bermuda.

Habitat: Common waxbills live in areas with tall grasses such as marshes, reed beds, abandoned cultivated areas, gardens, grassy paths and clearings, and farms and plantations.

Diet: They eat small seeds (such as grass seeds) taken from plants and off the ground. Termites and other insects are also sometimes eaten.

Behavior and reproduction: Common waxbills are very social birds, often found in small flocks during the breeding season and larger flocks (sometimes numbering in the thousands) at other times. Their calls include such sounds as “chip,” “tchic,” and “pit” while their song is often described as a “tcher-tcher-preee,” although other varieties are often heard. They build a pear-shaped nest of grass stems that is located at or near the ground. Females lay four to six white eggs. The incubation period is eleven to thirteen days, and the fledgling period is about twenty days.

Common waxbills and people: People often keep common waxbills in cages, and have been bred in aviaries.

Conservation status: These birds are not threatened, but their trade (importing and exporting them) is regulated. ■



ZEBRA FINCH

Taeniopygia guttata

Physical characteristics: Adult males have an orange cheek patch, chestnut ear patches, black barring at the throat, red eyes, white-spotted chestnut flanks, black and white bars on the tail, a gray head and back, orange legs, and a red bill. Adult females lack most of the colors of the males, but do have an orange bill. Juveniles look similar to females but have a dark bill. Adults are 3.9 to 4.3 inches (10 to 11 centimeters) long and weigh about 0.4 ounces (12 grams).

Geographic range: They are found throughout most of the interior of Australia (being absent from the north, east, and south coasts) and

Male (left) and female (right) zebra finches have different coloring, but both have a brightly colored bill. (Illustration by Joseph E. Trumpey. Reproduced by permission.)



in Timor (an island in Southeast Asia) and the surrounding Indonesian islands.

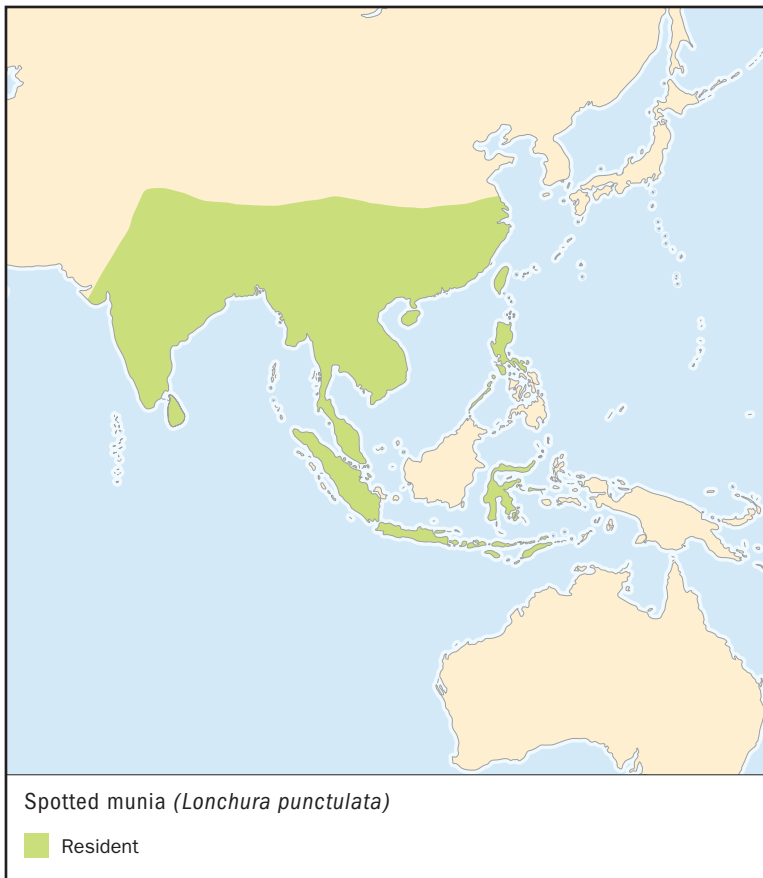
Habitat: Zebra finches inhabit a wide variety of habitats but prefer open areas such as plains, woodlands, savannas (flat grasslands), mulga scrubs (acacia [uh-KAY-shuh] trees that grow in arid regions of Australia), grasslands, salt marshes, orchards, cultivated areas and farmlands, and inhabited areas and gardens.

Diet: These birds feed on a variety of grass seeds and shoots, mostly from the ground, but also eat insects. They are able to live up to about 500 days without drinking water.

Behavior and reproduction: Zebra finches are very social birds that are found in pairs but more often found in large flocks. Their call is a “tya” or “tchee.” Males courting females give out a mixture of trills and nasal notes. They build flask-shaped nests of many types of materials but mostly of grasses that is lined with feathers and wool. An entrance tunnel is built on the side. Sometimes other bird nests or roosts are used, often redone to suit their own needs. Females lay three to eight white eggs. The incubation period is eleven to sixteen days, and the fledgling period is fifteen to twenty-two days.

Zebra finches and people: People often keep zebra finches as pets. They are often bred, studied, and sometimes domesticated.

Conservation status: Zebra finches are not threatened. ■



SPOTTED MUNIA

Lonchura punctulata

Physical characteristics: Spotted munias look alike with respect to males and females. They have big heads and large, conical bills, brown, scale-patterned feathers on a white breast and flanks, and a dusky brown face and throat. They also have plain brown upperparts and small grayish traces on rump. Juveniles have brown upperparts and buffy under parts, but do not have the scaled pattern on their under parts. Adults are 3.9 to 4.7 inches (10 to 12 centimeters) long.

Geographic range: They range from India, southern China, and Southeast Asia including parts of Malaysia and Indonesia. They have



Spotted munias are often found in large flocks of birds with their own and other species. (Illustration by Joseph E. Trumpey. Reproduced by permission.)

been introduced in Australia, Puerto Rico, Hawaii, Japan, and the Seychelles.

Habitat: Spotted munias inhabit open or semi-open habitats including cultivated and inhabited areas, parks and gardens, rice fields, grasslands, and forest edges.

Diet: The birds eat grass seeds, especially rice, from off of the ground and on live plants. They also eat small berries. Sometimes, they eat dead animals along roadsides. When human trash dumps are available, they are seen removing scraps of food, such as bread, from the area.

Behavior and reproduction: Spotted munias are often found in large flocks of birds of various species. Their call is a series of repeated “kitty-kitty-kitty.” Their wide variety of calls is used for keeping in contact with other birds or to express alarm. The soft song is a “klik-klik-klik” followed by a series of whistles and ending with a “weeee.” The song has many variations. A breeding colony is often built consisting of hundreds of round nests of grass and tree bark. Females lay three to seven white eggs. The incubation period is about fourteen days.

Spotted munias and people: People often keep and breed spotted munias. Many are caught for eventual sale into the pet business.

Conservation status: Spotted munias are not threatened. There is no noticeable impact on its numbers with respect to many of its numbers being caught as pets, except for those in Vietnam and Southeast Asia, where they are also caught for human consumption and as part of religious ceremonies. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

WEAVERS

Ploceidae

Class: Aves

Order: Passeriformes

Family: Ploceidae

Number of species: 117 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Weavers are small, finch-like birds, 4.3 to 10 inches (11 to 25 centimeters) in body length. Weavers are closely related to finches (family Fringillidae) and are sometimes referred to as “weaver finches.” Other common names for various genera within the family include queleas, fodies (in Madagascar), bishops, malimbos, mynas, and widowbirds. They are called “weavers” because of the complex, elaborate nests that various species build.

The weaver’s beak is short, sturdy, massive, and conical, like a typical finch’s beak. The legs are short and resemble those of passerines, except that in some species the feet are larger. The tail is usually long, occasionally as long as the head and body, or even longer, as in the widowbirds.

Weavers could be described as finch-like birds in tropical dress. A few are dull in color, while many others are brilliant and unique, the brightest and most widely seen colors being yellow, orange, and red. Males tend to be more colorful than females. The grosbeak weaver is mainly dark gray with white patches on its forehead and outer edges of the wings. Widowbird species have long, loose, elaborate black tails.

Males of most Ploceidae species change colors during the breeding season, from duller to more vivid, changing back to the duller coat when the breeding season over. The dull phase plumage of the male looks very similar to that of the female, which does not change color. A male red-collared widowbird, in the nonbreeding seasons, is colored light brown on its sides,

under parts and head, with dark gray wings, a yellow streak over each eye and yellowish on the cheeks, but the breeding plumage is shiny black with a bright red-orange collar across the throat, extending upwards in two broad red bands near the back of the head, and forming a red cap on the crown.

GEOGRAPHIC RANGE

Weavers live mainly in tropical Africa, as well as Madagascar, southern Asia, and as far east as Borneo and Java. Some species have been introduced into non-native habitats, where they have quickly adapted and flourished.

HABITAT

Habitat preferences among weaver species vary as much as their appearance and behavior. Most prefer open spaces, like grassland with or without scattered trees. The red-billed buffalo-weaver prefers savanna with acacia or baobab trees in east Africa, but is even more partial to areas disturbed by natural forces, such as wild animal herds, or human activities. Some species prefer living close to villages, probably for protection from predators that naturally fear humankind. If the people of the village abandon it, the weavers will desert their nest.

Many weaver species change habitats in the breeding season. The thick-billed weaver, during its breeding season, lives in spreads of grasses, reeds, and papyrus in marshes and rivers. During nonbreeding periods of the year, the species returns to tropical forest.

DIET

The staple food for most weaver species is seeds of various wild grasses, supplemented with insects, spiders, freshwater snails, and fruits. They also help themselves to discarded scraps of human food.

BEHAVIOR AND REPRODUCTION

Weavers are energetic and noisy, especially when gathered together in flocks, which is a large majority of the time for some species and most of the time for a few. Individuals of some weaver species may live alone, but even they periodically form social groups of up to a thousand birds.

Weavers forage in groups, and feed by picking grass seeds, insects, and spiders off the ground, or perching on stalks of

grass and yanking seeds from the stalk, crushing all but the hardest seeds with their powerful beaks. Some snag insects in mid-flight. Some weaver species stay more or less in one place, others migrate to greater or lesser degrees.

Weaver voices and songs are long-winded, complex, and vary with circumstances, including displays of aggression, mating, and warning. The song of the red-headed weaver has been transcribed as “chu-tsee-tsi, chu-tsi, tsee-tsi, tswi-tsi-tswée, tzirrrr,” morphing into “tchu-thi-tseee-iiiiiii-i, swizzzzzzz” or “sizzi-sizzi-sizzi-sizzi.”

Reproduction types vary among species and reflect the sort of nest-building used by each. One species, the cuckoo finch, is a brood parasite, similar to cuckoos, cowbirds, and honeyguides. The cuckoo finch lays her eggs in other birds’ nests. Consequently, her eggs are treated as family by the receiving birds, allowing the cuckoo to reproduce without caring for her own young. A few weaver species have individual, isolated nests for breeding couples, but most species build colonial nests, either individual nests in one tree, or a giant common nest. Entrances are on the bottom or sides. The communal nest of the social weaver can hold up to three hundred breeding pairs and may reach 10 feet (3 meters) in height and 15 feet (5 meters) in width.

Weavers living in colonies may be polygamous (puh-LIH-guh-mus; one dominant male, several breeding females), polygynous (puh-LIJ-uh-nus; one dominant female, several breeding males), cooperative (two or more males mate with all females, males help care for the young), or monogamous (muh-NAH-guh-mus; one breeding pair), but monogamous pairs may inhabit communal nests. More than one of these systems may be used even within one species. In communities with several breeding pairs, a dominant male mates with the largest number of females possible.

Weavers build nests in large, isolated trees and on power line support towers and windmills. In most species, the male builds the nest or adds onto a communal nest, then invites and entices females to mate with him and move into the nest to raise the young. Large birds of prey may build nests on top of communal weaver nests, partially camouflaging the raptor nest and lending some protection to the weavers. The birds finish the entire structure with a roof of intertwined leaves on twigs, for repelling rain.

The red-billed buffalo-weaver shows both polygamous and cooperative breeding behaviors. In polygamous systems, one male rules and defends up to eight chambers, each with a

female and young, in a single large, communal nest. In the cooperative method, two males build and defend nests, and feed the young.

Weavers aggressively defend their nests, not only from predators but also from other members of their own species. The defenders can distinguish nest-family members from strangers of the same species, threatening and driving them off. One or more males are the principal defenders and if they are away from the nest, a female may take over the task of defense.

Female weavers lay two to eight eggs per clutch. The eggs hatch in about fourteen days. In monogamous species, both parents raise the chicks, while in polygamous and polygynous species, adults other than the parents may help care for the young.

WEAVERS AND PEOPLE

It has been suggested that in prehistory, weaver birds may have inspired humans to try their own hand at weaving baskets and cloth. Since most weaver species eat grass seeds, including those of cultivated grasses like rice, wheat, and millet, some of these species have become pests, raiding grain crops. The most pestiferous (pest-like) of all weaver species, is the red-billed quelea. Other weaver species that are more or less sedentary can still cause major local losses of grain crops. These species include the red-headed quelea, the red bishop, and the yellow crowned bishop.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists six species of Ploceidae as Endangered, facing a very high risk of extinction, and seven as Vulnerable, facing a high risk of extinction. The main factor in declining populations of these species is habitat loss by humanity to agriculture and forestry.

SPECIES ACCOUNTS



VILLAGE WEAVER *Ploceus cucullatus*

Physical characteristics: Also called the spotted-back weaver and black-headed weaver, the adult body length runs 6 to 7 inches (15 to 17 centimeters), males being larger than females.

During the breeding season, the male is a combination of brilliant yellow on the under parts, and back of the neck and crown, as well as shiny black on the face and bib. The posterior belly may be bright orange-red. The folded wings show alternating streaks and spots of yellow and black, hence the common name, spotted-back weaver. The eyes are orange-red, the beak is black and the legs and feet are brown. The female is less garish, her upper parts olive with dark brown stripes



Village weavers have adapted well to changes that humans make in their environment. They often nest in or near villages. (Illustration by Amanda Humphrey. Reproduced by permission.)

paralleling the body length. The sides are yellow-brown, and the abdomen is whitish with some yellow. Outside the breeding season, the male plumage closely resembles that of the female, whose colors never change.

Geographic range: Africa, western through central to southern and southeastern.

Habitat: Open woods, forest edges, savanna, along rivers and streams, often close to or within villages.

Diet: The village weaver's diet consists of seeds, green vegetation, fruit, ant eggs, and mealworms.

Behavior and reproduction: Mating is at first monogamous, later changing to polygamous, meaning that the birds begin with one mate each and the male eventually finds other females to mate with. After the male has built one nest and attracted and mated with a female, he builds another nest and tries to entice another female to move in. One male may support up to five females in five nests.

Females usually lay two eggs per clutch, which hatch in about fourteen days. The male builds the nest, which holds one female and young, out of grass blades or other vegetation.

Village weavers derive that common name from their frequent habit of nesting near villages in Africa, probably for protection from predators that naturally fear people. Village weavers are well-known for their

skills in adapting to new environments, often ones much different from the original and far from home, including the New World, where they were brought by humans. The species has been living on various Caribbean islands for two hundred years. On Hispaniola, village weavers have adapted to near-desert conditions by eating the fruits of the *Stenocereus hystris* cactus and depending on them for water.

Village weavers might be frequent hosts for parasitic eggs of the dideric cuckoo. However, village weaver eggs frequently and constantly change color among individual females. Part of the ploy of brood parasites is ensuring the intruder egg closely resembles the host eggs, especially in color. Otherwise, the host mother may spot the intruder egg and pitch it from the nest. Village weavers keep ahead of the game by constantly changing egg colors to keep the parasitic weavers confused.

Village weavers and people: Village weavers may make minor nuisances of themselves by raiding grain crops for the seeds.

Conservation status: These weavers are not threatened, but are numerous, widespread, and adaptable. ■



BAYA WEAVER

Ploceus philippinus

Physical characteristics: Adult body length is 5.9 inches (15 centimeters). Outside the breeding season, the male and female are similarly colored, yellow-brown with dark streaks on the upper body, off-white below. During the breeding season, the male has a yellow crown and breast, the upper body dark brown with yellow streaks, and off-white under parts.

Geographic range: India and Sri Lanka through southwestern China, Singapore, Sumatra, and Java.

Habitat: Baya weavers live in grassland, scrub, secondary forest, farmed areas, usually near fresh or brackish water.

Male baya weavers have brighter colors during the breeding season, and build nests to help attract females. (Illustration by Amanda Humphrey. Reproduced by permission.)



Diet: These weavers eat mainly seeds of guinea grass, *Panicum maximum*.

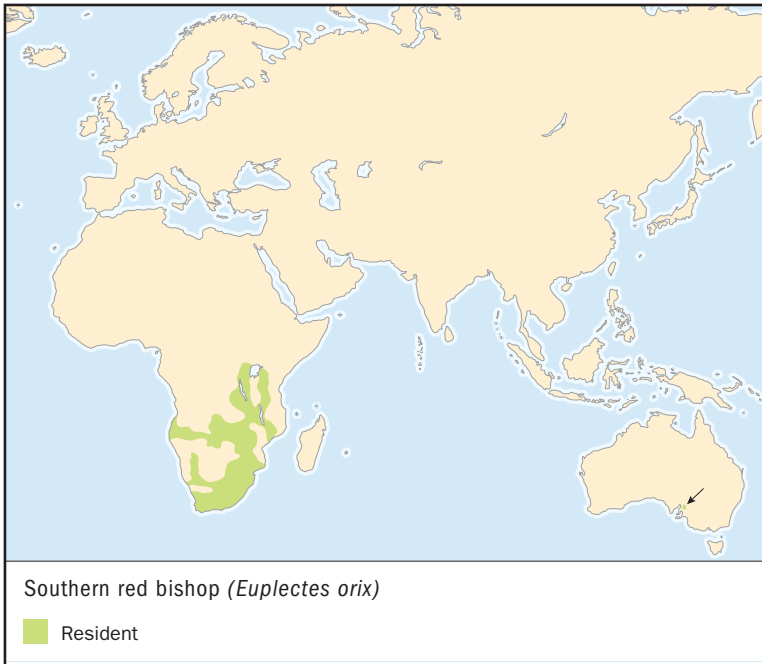
Behavior and reproduction: Males change to brighter plumage during the mating season and start building nests to attract females. Nests, one per breeding female, are built in trees, sometimes alongside hornet nests or aggressive, stinging red ants. In these cases, each species lives in peace with one another, and both gain protection from predators specific to each species.

Each nest is shaped more or less like a vase, constricted in the middle and with an entrance at the bottom. It may hang by a long rope from a tree branch or be directly attached to the branch. The baya weavers build their nests out of sectioned blades of guinea grass, the seeds of which are their main food staple.

The male usually assembles several partially built nests that look like domes with hanging straps, then sings and displays on the unfinished nests to attract females. An interested female will inspect one of these nests carefully. If it suits her, she displays approval and mates, after which either the male or female completes the nest. As soon as the female is busy tending the eggs, the male starts singing and displaying for females on another half-built nest, eventually taking in and mating with as many as three females. A female lays three or four eggs and must care for the chicks alone.

Baya weavers and people: Baya weavers have earned reputations as pests by raiding rice fields. Consequently, the birds often end up as food for humans.

Conservation status: Baya weavers are not threatened. ■



SOUTHERN RED BISHOP

Euplectes orix

Physical characteristics: The southern red bishop is also called the grenadier weaver because of the bright colorings of the male in the breeding season. The adult body length is 4 inches (12.5 centimeters). During the breeding season, the neck, tail and wings of the male become brilliant red-orange, while the breast, underside, and the top of the head and face become a lustrous black. Even the beak changes to black. Out of season, the male's coloring reverts to dull shades of brown. The females look similar to out-of-season males and do not change color during the breeding season.

Geographic range: All of Africa south of the Sahara, except part of southwest, and horn of Africa (northeast).

Habitat: Grasslands with tall grass, near water sources.

Diet: Green or ripe seeds of wild grasses and shrubs, young leaves and flowers, and insects.

Behavior and reproduction: The red bishop forages in tall grasses, plucking seeds from grass stalks, often perching on grass stalks to reach the seeds, and on shrub seeds, leaves, flowers and occasional insects.

The red bishop is polygynous, one male mating with several females who settle in nests made by the male. At the start of a breeding season, groups of males will settle in one large area, among treetops, each male building one or more nests, then singing and posing to attract females.

Oddly enough among weavers, the red bishop is not especially vocal. It will screech if alarmed, and uses a small number of other calls, but nothing drawn out and elaborate as in most other weavers.

Red bishops and people: Red bishops can be serious pests, flocks of them descending on grain fields and helping themselves to the seeds.

Conservation status: The red bishop is not considered threatened. ■

FOR MORE INFORMATION

Books:

Goodman, Steven M., and Jonathan P. Benstead. *The Natural History of Madagascar*. Chicago: University of Chicago Press, 2003.

Kavanagh, James. *African Birds*. Chandler, AZ: Waterford Press, 2001.

Morris, P., and F. Hawkins. *Birds of Madagascar: A Photographic Guide*. New Haven, CT: Yale University Press, 1998.

Strange, Morten. *Birds of Southeast Asia: A Photographic Guide to the Birds of Thailand, Malaysia, Singapore, the Philippines and Indonesia*. London: New Holland, 1998.

Strange, Morten. *A Photographic Guide to Birds of Malaysia and Singapore: Including Southeast Asia, the Philippines and Borneo*. Singapore: Periplus, 2000.

Periodicals:

Collias, E. C. "Inheritance of Egg-color Polymorphism in the Village Weaver (*Ploceus cucullatus*)."
Auk 110, no. 4 (1993): 983–692.

Keng, Wang Luan. "Nature's Nest Architects at Sungei Buloh." *Wetlands* 3, no. 1 (1996). Online at <http://www.sbwr.org.sg/wetlands/text/96-3-1-1.htm> (accessed on July 12, 2004).

Lahti, David C. "Cactus Fruits May Facilitate Village Weaver (*Ploceus cucullatus*) Breeding in Atypical Habitat on Hispaniola." *The Wilson Bulletin* 115, no. 4 (2003): 487–489.

Lawes, Michael J., and Steven Kirkman. "Egg Recognition and Interspecific Brood Parasitism Rates in Red Bishops (Aves: Ploceidae)." *Animal Behaviour* 52, no. 3 (1996): 553–563.

Victoria, J. K. "Clutch Characteristics and Egg Discriminative Ability of the African Village Weaverbird, *Ploceus cucullatus*." *Ibis* 114 (1972): 367–376.

Williams, J. G., and G. S. Keith. "A Contribution to Our Knowledge of the Parasitic Weaver *Anomalospiza imberbis*." *Bulletin of the British Ornithological Club* 82 (1962): 141–142.

Web sites:

Percy FitzPatrick Institute of African Ornithology: Roberts VII Project. <http://web.uct.ac.za/depts/fitzpatrick/docs/listlink.html> (accessed on July 12, 2004).

SPARROWS

Passeridae

Class: Aves

Order: Passeriformes

Family: Passeridae

Number of species: 39 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Sparrows are small plumpish birds with short, powerful bills and short tails. They have different shades of brown and gray on their upperparts that is sometimes streaked lightly to heavily, and white or buff under parts that are streaked with black or brown. Adults are 4.5 to 7.0 inches (12.0 to 17.5 centimeters) long and weigh in the approximate range of 0.4 to 1.9 ounces (10 to 55 grams).

GEOGRAPHIC RANGE

They are found worldwide except for Antarctica, north and west Australia, and the most northern parts of Eurasia.

HABITAT

Sparrows are found in open habitats with scattered trees such as arid steppes (treeless plains that is often semiarid and grass-covered) and woodlands.

DIET

Sparrows eat seeds of small plants including weeds, seeds from cultivated cereals, tree seeds, small berries, invertebrates such as insects (mostly for the young), food left out for animals and livestock, and human food wastes. Sparrows that forage in flocks often alternate feeding and resting, probably in order to digest hard seeds.

BEHAVIOR AND REPRODUCTION

Sparrows are very social birds. They often are found in large flocks while searching for food and while roosting. Sparrows

regularly dust themselves off in dirt and bathe in water, oftentimes with other sparrows. While roosting, the birds usually remain close together and keep in contact with each other through soft calls. Sparrows are not migratory birds, but do wander during the nonbreeding season in search of food. A few species that live in cold, high-latitude and high-altitude climates regularly migrate to milder climates in the winter.

Males usually call out to females at nest sites. Their territory is only the nearby area around a nest. The usually monogamous (muh-NAH-guh-mus; having one mate) breeding pair builds a domed-over nest with a side entrance. Nests are sometimes built close to other nests but others are more scattered about, with space between each depending on the number of good nesting sites. Nests are made with grasses and rootlets lined with fine grasses and long hair, often on the ground. Females lay four to six eggs that vary in color and shape. Several broods (young birds that are born and raised together) are possible each year for most species. Both parents take part in incubating (sitting on and warming) the eggs and taking care of the young. Young are born with down, but feathers develop quickly. The fledgling period (time necessary for young bird to grow feathers necessary to fly) is twelve to twenty days. The breeding pair keeps the nest throughout the year.

SPARROWS AND PEOPLE

People sometimes consider sparrows as pests when seeds of cultivated grains are eaten by the birds in large amounts. Otherwise, sparrows and people do not have a significant relationship.

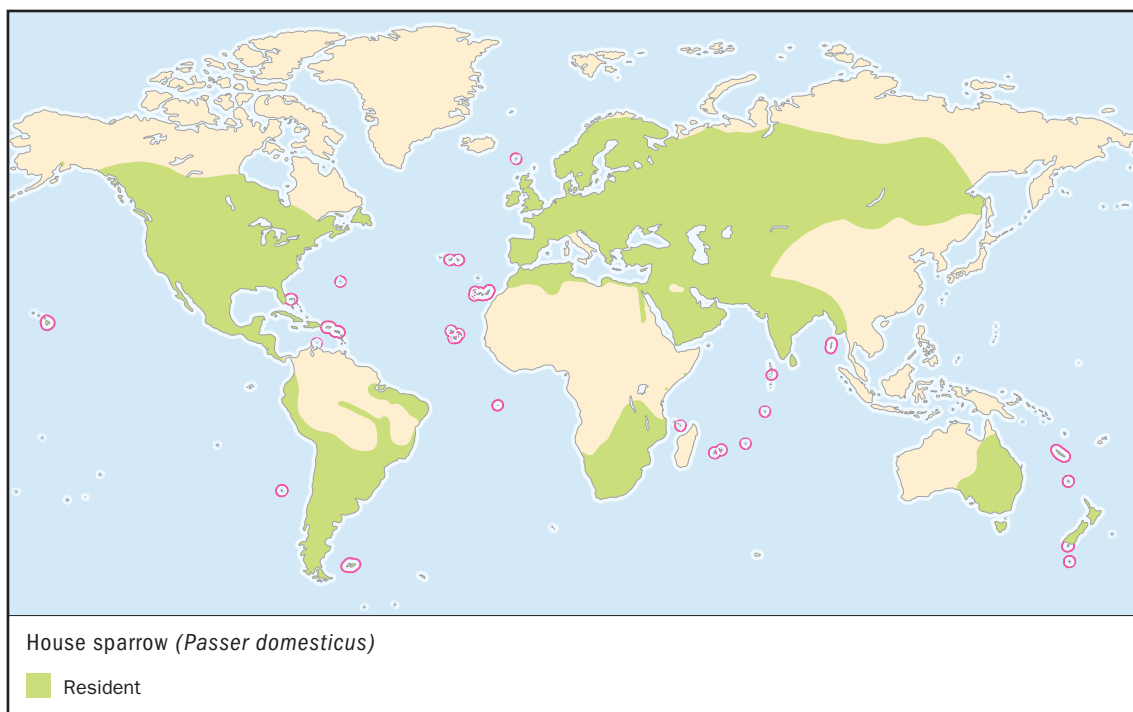
CONSERVATION STATUS

Sparrows are not under any threat, however the house sparrow in western Europe has declined in large numbers.



BROOKLYN, NEW YORK: BIRTHPLACE OF U.S. HOUSE SPARROW

About one hundred house sparrows were introduced into Brooklyn, New York, from Europe from the autumn of 1851 into the spring of 1852. The species quickly moved throughout the eastern United States and Canada.



SPECIES ACCOUNTS

HOUSE SPARROW *Passer domesticus*

Physical characteristics: House sparrows are short and stocky birds with very short legs and thick bills. Male house sparrows have a gray crown (top part of head) and cheeks edged with chestnut, a chestnut nape (back part of neck), a black bill, and a usually small (but sometimes larger) black bib (area under bill, just above the breast) with a white moustache-like area below. They also have a white wing-bar, buff-brown back and black-streaked wings, pale gray under parts, and a gray rump and tail. Females are colored a drab brown overall with a dusky stripe below buff-colored eye brows, blackish streaked buff-brown upperparts, a dusky bill with a yellowish base that reaches to the lower mandible (lower part of bill), a white wing bar, and brownish gray under parts. Juveniles are similar to females but have browner upperparts, buffier under parts, and a pinkish bill. Adults are 5.5 to 6.3 inches (14 to 16 centimeters) long and weigh between 0.7 and 1.4 ounces (20 and 40 grams). Their

wingspan is 9.5 to 10.0 inches (24.1 to 25.4 centimeters) long.

Geographic range: House sparrows are found in north Africa and Eurasia, excluding the most northern regions and the area from Japan west to Thailand. Beginning in the mid-nineteenth century, they were introduced to most of the rest of the human-inhabited world.

Habitat: House sparrows inhabit all areas throughout the world that are inhabited by humans. They often breed and winter in towns, cities, and farmlands. The bird is not usually found in woodlands and forests that have dense foliage.

Diet: They eat seeds (especially weed seeds), household scraps, insects, caterpillars, grains, and fruits, mostly from the ground around trees and shrubs. Most of their food comes from livestock feed. Young are fed small invertebrates (animals without a backbone).

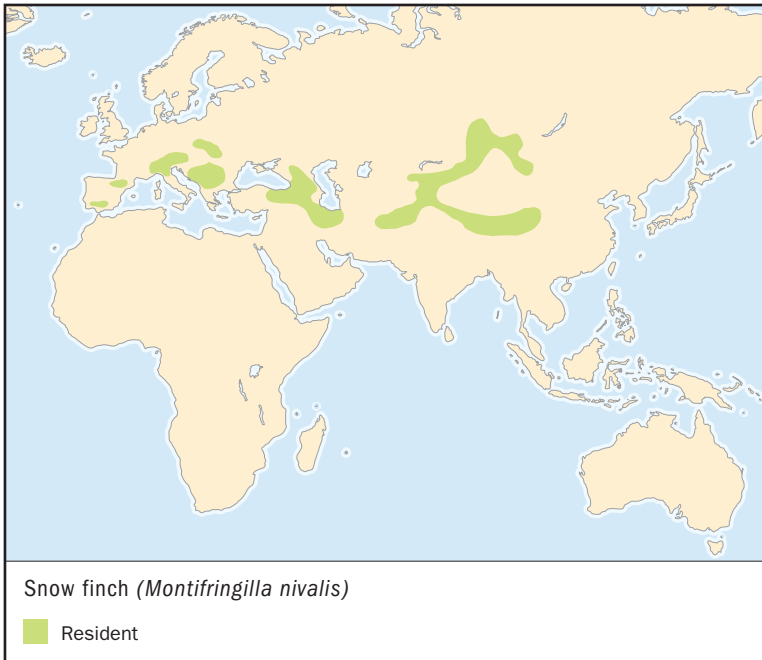
Behavior and reproduction: House sparrows are aggressive and noisy birds. They generally do not migrate, but stay in one area throughout the year in small colonies (groups of birds that live together and are dependent on each other). They prefer to live around humans. Their song is a twittering series of cheeps or chirrup. The birds sing year-round, although less often on the hottest, coldest, and rainiest days. Females sing most frequently when they are without a mate. During breeding season, they join in pairs, but otherwise are found in family groups and flocks. They like to build nests in holes within buildings and trees, but also will build free-standing domed nests on tree branches. Sometimes they take nests away from other bird species. Females may lay up to five clutches (group of eggs hatched together) of eggs each year, but two to three are average. One clutch is two to five eggs. The incubation period (time to sit on eggs before they hatch) is ten to fourteen days, and the fledgling period is fourteen to sixteen days. Both sexes are involved in breeding activities, but females do more of the brooding. Both parents fed regurgitated (partially digested) food to the young.



House sparrows live throughout the world, wherever humans live. (Richard Galosy/Bruce Coleman Inc. Reproduced by permission.)

House sparrows and people: People sometimes consider house sparrows pests when they feed too much on cereal grains being raised by farmers.

Conservation status: House sparrows are not threatened, but have seen major decreases in their numbers in western Europe at the end of the twentieth century and into the twenty-first century. ■



SNOW FINCH

Montifringilla nivalis

Physical characteristics: Snow finches are large, plumpish finch-like birds with a blue-gray head, brownish body, and white colorings that are visible while flying (on wings nearest the body and on tail except for dark brown bar that goes down the middle and dark brown spots across the ends). Males and females look similar, with females being paler and less white on the wings. Adults are 6.7 to 6.9 inches (17.0 to 17.5 centimeters) long and weigh between 28 and 54 centimeters).

Geographic range: They are found only on mountains over 6,600 feet (2,000 meters) in Europe and Asia.

Habitat: They are found in areas of barren, rocky ground and mountains at elevations from 6,600 to 11,500 feet (2,000 to 3,500 meters). They are sometimes found near buildings that are located within these mountainous areas.

Diet: Their diet consists of grains during the winter, but will eat invertebrates during other seasons. Often, snow finches feed on seeds

Snow finches are found only on mountains over 6,600 feet (2,000 meters) in Europe and Asia. (Illustration by Amanda Humphrey. Reproduced by permission.)



blown onto high snowfields. They also eat on scraps tossed out from human settlements. Young are fed only animal food.

Behavior and reproduction: Snow finches are very social birds, often forming wandering groups and large flocks outside the breeding season. They spend most of their time on the ground hopping around with their wings folded. During the breeding season, they form loose colonies of up to six pairs. They build nests in rock crevices or holes in buildings. Nests are often built where trees are no longer found. They fill the crevice or hole with grasses and moss and line it with feathers. Females lay three to four eggs. The incubation period is thirteen to fourteen days, and the fledgling period is twenty to twenty-one days. Two clutches are possible each year. Both parents help to feed and take care of the young.

Snow finches and people: There is no known significant relationship between people and snow finches.

Conservation status: Snow finches are considered common. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

“House Sparrow. *Passer domesticus*.” U.S. Geological Survey, Department of the Interior. <http://www.mbr-pwrc.usgs.gov/id/fram1st/i6882id.html> (accessed on July 20, 2004).

STARLINGS AND MYNAS

Sturnidae

Class: Aves

Order: Passeriformes

Family: Sturnidae

Number of species: 104 to 118
species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Starlings and mynas (MYE-nahz), also called sturnids, are stocky, small- to medium-sized birds with strong, straight bills (either thin and pointed or somewhat blunt, depending on the species), short wings that are rounded (in forest and resident species) and somewhat longer (in open country and migrant species), a short squared-off tail, and strong legs. Many species have plumage (feathers) that is black or dark, while others are white or other colors, and still others are iridescent (brilliant colors). Many species have colorful bare facial skin or wattles (skin that hangs from throat). They often have long, narrow feathers on the neck, with those of the males being most noticeable.

Mynas have a dark brown body, black head and tail, bright yellow bill and legs, and often display white wing patches on the primary feathers. Starlings are mainly glossy green and purple with large buffy-white spots at the tips of feathers. Bills are dark brown in winter, but turn yellow in spring. Starlings molt (lose, then re-grow, feathers) once a year, following breeding, but seasonal differences are found in some species. Adult starlings and mynas are 7 to 17 inches (18 to 43 centimeters) long and weigh between 1.0 and 3.8 ounces (30 and 105 grams).

GEOGRAPHIC RANGE

Starlings and mynas range through Africa (except for northern regions), Eurasia (except for northern areas), the South Pacific, and southeastern Australia. The birds have been introduced onto all continents except for South America and Antarctica, and on many oceanic islands.

HABITAT

These birds are located in barren semi-deserts, temperate (mild) grasslands, tropical savannas (flat grasslands), tropical rainforests, dry to moist evergreen and deciduous forest, and agricultural and urban areas.

DIET

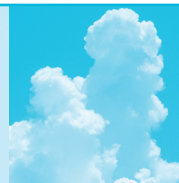
They eat mostly insects, but also fruits, berries, grains, dead fish, garbage, and nectar. The birds often eat different foods depending on the time of year and availability of certain foods. They probe for food by opening its bill into materials, pushing loose particles apart, and creating an open area in which to look for food.

BEHAVIOR AND REPRODUCTION

Most starlings and mynas are fairly social birds. Some live in trees, but most spend much time on the ground. They often nest in loose colonies (birds that live together and are dependent on each other). Some species are aggressive, while others are shy and quiet, generally staying by themselves or in small groups. Their songs and calls are loud, varied, sometimes unpleasant and mechanical sounding, and rarely with any melody. Many species can imitate other birds. Starlings and mynas fly swiftly and can easily maneuver, even twisting and turning together in flocks. Species that nest in temperate climates often migrate to warmer climates during winters.

Most sturnids use the nests of other birds, often barbets and woodpeckers, many times taking away a bird's nest with its aggressive behavior. Other sturnids use crevices and holes in rocks, nest boxes, or recesses in building and other structures. They construct a large nest of grasses, leaves, fine twigs, and other available materials. Both sexes work together to make the nest, and nests are often reused.

Starling eggs are often pale blue, but also white to cream-colored or have dark spots on them. In some cases, only females incubate (sit on) eggs, while in other cases both parents incubate. The incubation period (time to sit on eggs before hatching) is



SHAKESPEARE'S STARLINGS

All of the 200 million or so European starlings that are found today in North America came from approximately 100 birds that were released in New York City's Central Park in the early 1890s. An American society dedicated to introducing all birds mentioned in Shakespeare's works set these birds free. The migrating birds reached northern Florida by the winter of 1918, and breeding birds were found by the 1920s in Ontario and Maine. By the 1940s, European starlings reached the west coast and, in the 1970s, the birds were seen in Alaska.

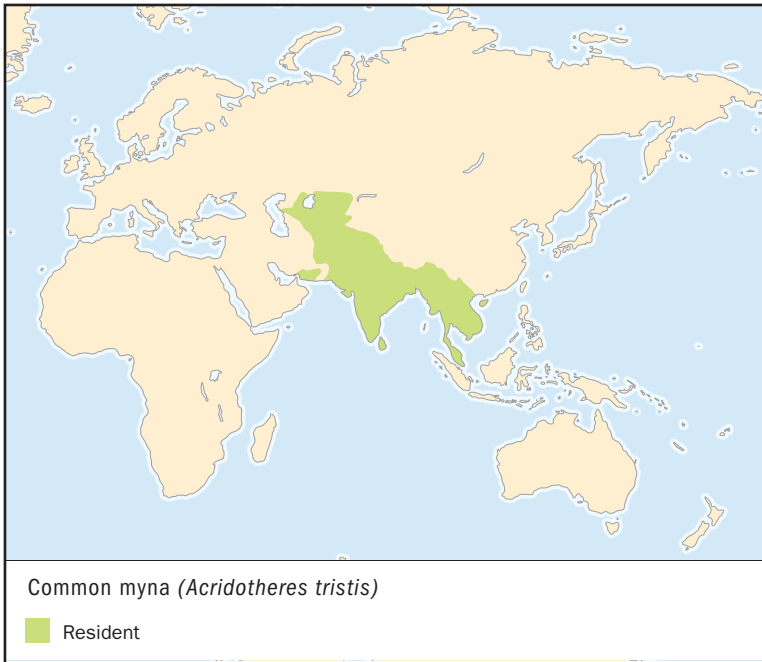
usually less than fourteen days. Hatchlings (newly born birds) are pink with some patches of down on top of head and back. They are blind for the first few days of life. Both parents feed young and, in some cases, helpers (from earlier offspring) assist in the feeding and care. The fledgling period (time for young to grow feathers necessary to fly) is usually no longer than twenty-one days. Many species produce one to three broods (young birds that are born and raised together) each year.

STARLINGS, MYNAS, AND PEOPLE

Many species are considered agricultural pests. Some occur in such great numbers in urban areas that their acidic droppings damage buildings and monuments and cause health risks. Many species are considered beneficial because they help control insect pests. Others help to scatter seeds around. Starlings and mynas are often captured for food.

CONSERVATION STATUS

Five species of starlings and mynas are listed as Extinct (died out within historic times); two species as Critically Endangered, facing an extremely high risk of extinction; two species as Endangered, facing a very high risk of extinction; five species as Vulnerable, facing a high risk of extinction; and eight species as Near Threatened, in danger of becoming threatened with extinction.



COMMON MYNA *Acridotheres tristis*

SPECIES ACCOUNTS

Physical characteristics: Common mynas are stocky, brown birds with a glossy black head and throat; yellow bill; bare yellow skin behind the eyes; and yellow legs. Females and males are familiar in appearance, while juveniles are duller in colors. Adults are 9.1 to 9.8 inches (23 to 25 centimeters) long and weigh between 2.9 and 5.0 ounces (82 and 143 grams).

Geographic range: They are found in lowlands and to elevations of 4,500 feet (1,370 meters) in southern Asia from southeastern Iran through Afghanistan, Pakistan, India, Sri Lanka, southern China, and Vietnam. They have been introduced in Arabia (the peninsula in far southwestern Asia), South Africa, Madagascar, Australia, New Zealand, Fiji, Cook Islands, Society Islands, Hivaoa in the Marquesas Islands, and Hawaii.

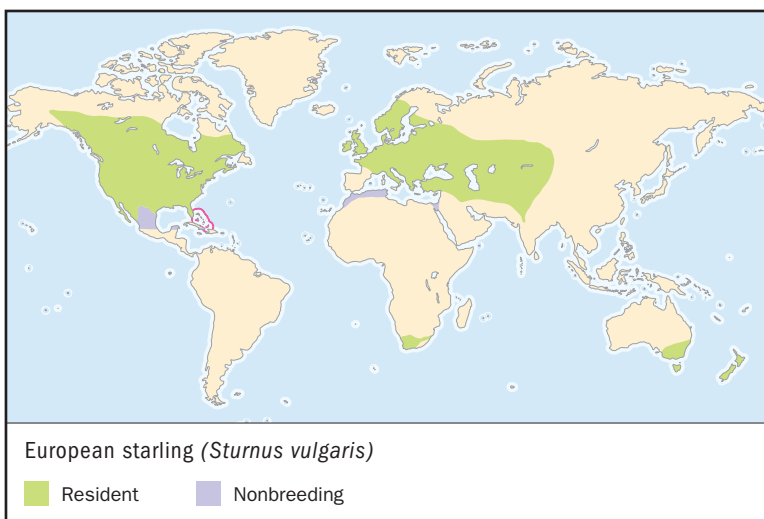
Habitat: Common mynas inhabit open habitats such as farmlands and cities.

Diet: Their diet consists of insects, small vertebrates (animals with backbone), carrion (decaying animals), fruits, grains, and occasionally on eggs and the nestlings (young bird unable to leave nest) of other birds. They feed mostly on the ground.

Behavior and reproduction: Common mynas are tame, bold, and noisy birds; usually seen in pairs or small flocks. They build bulky nests in tree cavities, pockets in buildings, and in heavy vegetation. Females lay four to five glossy, pale blue eggs. The incubation period is thirteen to eighteen days. Both parents incubate the eggs. The nestlings may leave the nest at around twenty-two days or longer, but may still not be able to fly for another seven days or so.

Common mynas and people: Common mynas are considered a pest in Australia where thousands of noisy birds roost near populated areas. They are also considered a pest when they eat grain or fruit from agricultural lands.

Conservation status: Common mynas are not threatened. ■



EUROPEAN STARLING *Sturnus vulgaris*

Physical characteristics: European starlings are a purple-green iridescent, short-tailed black bird with a long thin bill that changes seasonally from black in winter to yellow during the nesting period, and buffy-to-white tips and edging on feathers. Following the fall molt, the birds are very spotted with white as a result of white-tipped body feathers. As winter continues, the white tips wear off and the birds show mostly the iridescent black with little spotting. Males have longer, narrower neck feathers and, during nesting season, a blue base to the bill. Females have a pink base to the bill. Juveniles are gray-brown with a streaked breast and dark bill. Adults are about 8.5 inches (21.6 centimeters) long, with a wingspan of about 15.5 inches (39.4 centimeters).

Geographic range: The birds range throughout most of temperate Eurasia from Iceland east. They have been introduced in South Africa, Polynesia, (Fiji and Tonga), Australia, New Zealand, Bermuda, North America (across both coasts, Pacific and Atlantic, and southern Alaska into Mexico), Puerto Rico, and Jamaica.

Habitat: European starlings are found in open country, open woods, and urban and suburban areas.

European starling females incubate their eggs alone, but both males and females help feed the young once they've hatched. (B. and C. Calhoun/Bruce Coleman Inc. Reproduced by permission.)



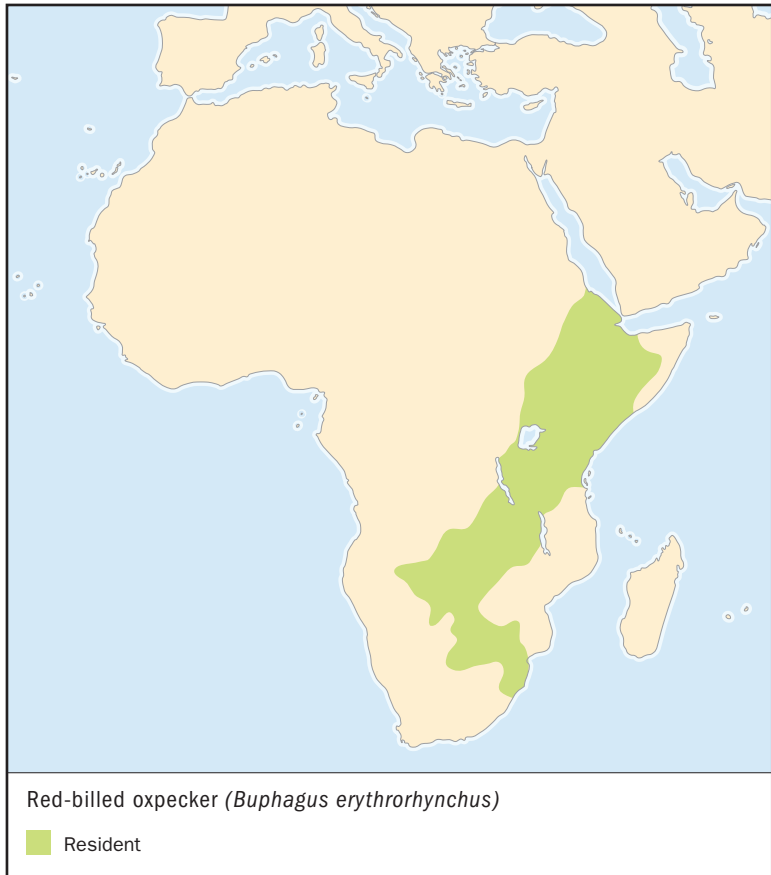
Diet: The birds eat many types of insects, other arthropods, grains, and fruits. They usually feed off the ground, and often in large flocks.

Behavior and reproduction: European starlings are aggressive birds that often fight with woodpeckers who have built nests or who are already using nests. They roost in flocks that may number in the millions. Their songs include melodies, clear whistles, clatters, and twitters, and they sometimes imitate other bird species, and even human voices. They build nests either alone or in loose colonies, mostly from

March to May in the Northern Hemisphere, and September to December in South Africa. Females lay three to six pale blue eggs, and incubate them alone. The incubation period is eleven to fifteen days. Both parents feed the young. The fledgling period is eighteen to twenty-one days, and two to three broods are produced each year.

European starlings and people: European starlings eat many insect pests and weed seeds so are seen as beneficial in that respect. They are considered a pest in North America because of huge numbers within flocks, building messy nests on buildings, taking grains and fruits from agricultural lands, and competing with songbirds and woodpeckers for nest sites.

Conservation status: European starlings are not threatened. ■



RED-BILLED OXPECKER

Buphagus erythrorhynchus

Physical characteristics: Red-billed oxpeckers have olive-brown or gray-brown upperparts, a red short, thick bill, red eyes with very noticeable yellow circles of flesh around the eyes; light gray-brown wings and tail; tan or pale yellow rump and breast, and gray legs and feet. Juveniles have a dark bill and eyes, and brown area around the eyes. Adults are 7.5 to 8.7 inches (19 to 22 centimeters) long and weigh between 1.5 and 2.1 ounces (42 and 59 grams).

Geographic range: They range widely in east and southeast Africa with a scattered distribution from western Central African Republic, Sudan, Ethiopia, and Somalia, south in Uganda, Kenya, Tanzania,



Red-billed oxpeckers feed on ticks, fleas, and other biting flies taken from animals such as rhinoceros, elephants, giraffes, and cape buffaloes. (Kim Taylor/Bruce Coleman Inc. Reproduced by permission.)

eastern and southern Democratic Republic of the Congo to northern and eastern South Africa.

Habitat: Red-billed oxpeckers live in open savannas, bushlands, and forests (up to elevations of 9,000 feet (2,745 meters) that contain large mammals including domestic livestock.

Diet: The birds feed on parasites (organism living on another) such as ticks, fleas, and other biting flies taken from host mammals and on host blood and dead tissues and skin. They can eat hundreds of these parasites each day.

Behavior and reproduction: Red-billed oxpeckers remain in the same area and do not migrate. They live alongside large mammals and are often found perching (sitting) on the heads and necks of rhinoceros, elephants, giraffes, and cape buffaloes. Courtship often takes place on the backs of these host mammals. Breeding occurs at different times in different areas, often at the beginning of the rainy season but has been reported in all months. They build nests in natural tree cavities made of grasses lined with hair and dung. Females lay one to five creamy white eggs with brown to lilac speckles. The incubation period is twelve to thirteen days, and is done by both parents. Both parents and helpers feed the young. The fledgling period is about thirty days, but remain dependent on the parents for another thirty days.

Red-billed oxpeckers and people: People often consider red-billed oxpeckers as pests, especially around livestock. Extermination programs have been carried out in various agricultural areas to kill off the birds.

Conservation status: Red-billed oxpeckers are listed as Not Threatened. Their numbers have declined in areas that use pesticides to control the birds around livestock. ■

FOR MORE INFORMATION

Books:

Alsop, Fred J. III. *Birds of North America*. New York: Dorling Kindersley, 2001.

Baughman, Mel M., ed. *Reference Atlas to the Birds of North America*. Washington, DC: National Geographic, 2003.

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Field Guide to the Birds of North America, 4th ed. Washington, DC: National Geographic Society, 2002.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Kaufman, Kenn, with collaboration of Rick and Nora Bowers and Lynn Hassler Kaufman. *Birds of North America*. New York: Houghton Mifflin, 2000.

Sibley, David. *The Sibley Guide to Birds*. New York: Alfred A. Knopf, 2000.

Terres, John K. *The Audubon Society Encyclopedia of North American Birds*. New York: Knopf, 1980.

family CHAPTER

OLD WORLD ORIOLES AND FIGBIRDS

Oriolidae

Class: Aves

Order: Passeriformes

Family: Oriolidae

Number of species: 29 to 30
species

PHYSICAL CHARACTERISTICS

Orioles and figbirds are thrush-like birds in size and shape. Adults have patterns of brilliant yellows and blacks, while juveniles (and some adults) are streaked near the abdomen. They have long rounded wings and square-tipped, twelve-feathered tail. The tenth primary feather is well developed, while the number of secondary feathers is usually eleven in orioles and ten in figbirds. Bills are straight, stout, and notched at the tip of the upper mandible (top part of a bird's bill). On the sides of the bill are bristles and narrow nostrils that are partly protected by a membrane. Their feet are stout, but shorter than the longest toe. Adults are 7.0 to 11.5 inches (20 to 28 centimeters) long and weigh between 2 and 5 ounces (50 and 135 grams).

Orioles have brightly colored yellow and black plumage (feathers), a brick red bill, and slate gray feet. Male orioles are more brightly plumaged than females and have a bare patch of red skin around the eyes. Juveniles have brown-olive backs with dull bill, eyes, and feet, and a white abdomen with dusky streaks.

Figbirds (and some orioles) have black or slate-colored bill, sometimes pale eyes, and flesh-colored or black feet. Males have a black crown (top of head) and bill, an olive back, and yellow, white, olive, or gray breasts, while females and juveniles are plumaged like juvenile orioles.

GEOGRAPHIC RANGE

Orioles and figbirds are located throughout the far northwest Africa and the sub-Saharan, temperate Eurasia (except its

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

central deserts), south and east to India, Southeast Asia, and Indonesian archipelagos as far as New Guinea, and north and east Australia.

HABITAT

Orioles and figbirds are found in medium to tall woodlands and forests, including rainforests. They prefer to live in the upper dense foliage and crowns of broadleaf trees within forests and woodlands, generally in temperate (mild) regions but also in rainforests in the tropics.

DIET

These birds eat fruits and insects.

BEHAVIOR AND REPRODUCTION

Figbirds usually live in communities of twenty to forty birds during the nonbreeding season and in larger colonies during the breeding season, while orioles are usually solitary birds. Figbirds like to perch on high bare branches. They give one- or two-note whistled songs all year round in order to maintain contact with other figbirds. Orioles sing a short rolling warble that is repeated many times during breeding and is heard for nearly 0.5 mile (0.8 kilometers) in order to show they are defending a territory. The grouping and pitch of notes vary among species, but the basic sound is the same. Both orioles and figbirds use short, harsh squawks when they are nervous or angry. They fly in direct and wavy flights, from tree to tree, but orioles are faster and swoop up just before perching. Orioles and figbirds are quiet and motionless while in tree crowns, often sun-bathing or rain-bathing there. About two to ten breeding pairs are found per 0.6 square miles (1 square kilometer), with the exact number determined by their surroundings.

Breeding occurs from time-to-time all year-round in the tropics, but is from spring to early summer in temperate regions. Orioles and figbirds are basically monogamous (muh-NAH-guh-mus; having one mate). Oriole males find and hold a small territory while females build the nest (sometimes more than one) and incubate (sit on) the eggs with some help from her mate. Orioles build thick, deep basket-shaped nests of dry plant fiber tied together with animal wool, moss, and lichen. The nest is hung from a horizontal fork in the outer branches of trees usually high off the ground. Strips are moistened with their saliva to hold the nest together. Figbirds build a rough cup of

twigs and tendrils in small outer branches. Figbird and oriole females lay two to four eggs (usually three in figbirds) that are pale gray olive in figbirds and pinkish white to pale cream buff in orioles. Both eggs can be spotted and speckled with black to reddish browns. The incubation period (time to sit on and warm the eggs before they hatch) is sixteen to eighteen days. Young have yellow down and are fed by regurgitated food (food brought up from stomach) from their parents. Sometimes male helpers also help out. Usually only one brood (young birds born and raised together) occurs each year.

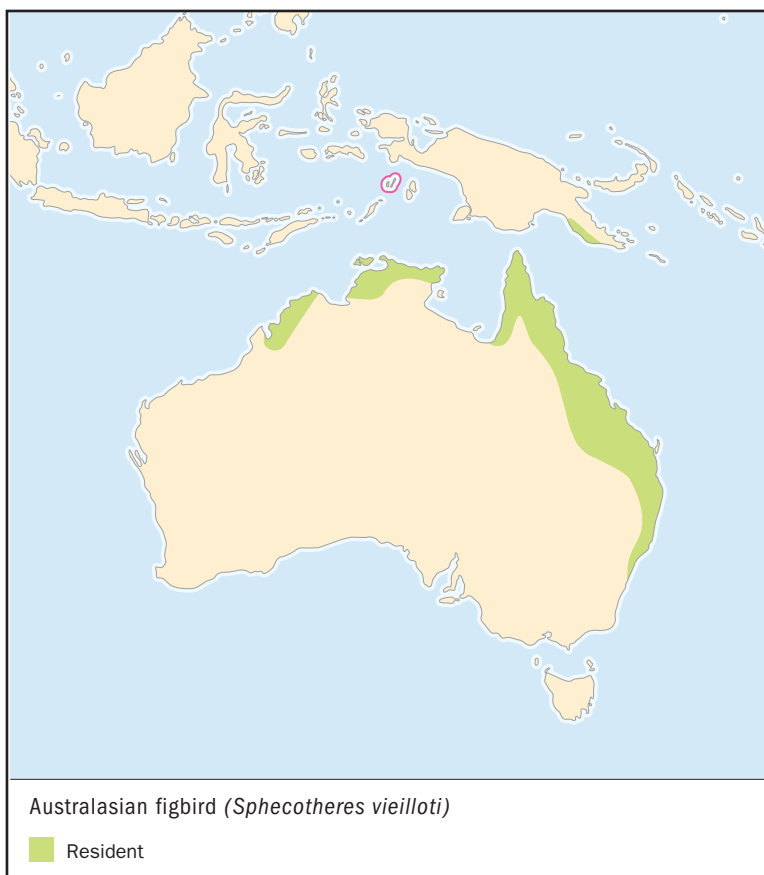
ORIOLES, FIGBIRDS, AND PEOPLE

There is very little significance between orioles and figbirds and people.

CONSERVATION STATUS

One species of orioles and figbirds are listed as Endangered, facing a very high risk of extinction; two species as Vulnerable, facing a high risk of extinction; and three species as Near Threatened, in danger of becoming threatened with extinction.

SPECIES ACCOUNTS



AUSTRALASIAN FIGBIRD *Sphecotheres vieilloti*

Physical characteristics: Australasian figbirds are stout, fairly short-tailed figbirds with olive-green upperparts, a gray throat, buff-red bare eye skin, and a black head. They also have black primary feathers and tails. Adults are 10.0 to 11.5 inches (25 to 29 centimeters) long and weigh between 4.0 and 4.5 ounces (110 and 130 grams).

Geographic range: They are located on the coastal northern and eastern Australia (Kimberley Division to Illawarra district), southeast New Guinea, and Kai Islands (in the Banda Sea).

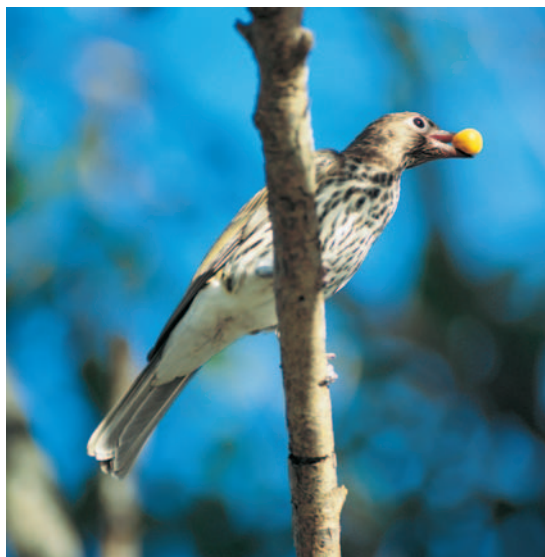
Habitat: Australasian figbirds are found at the edges of rainforests, gallery vine forests, mangroves, and gardens.

Diet: Australasian figbirds feed on small, soft fruit such as figs, native cherries, and ink weed and tobacco bushes. They also eat guavas, bananas, and mulberries. They usually feed in tree crowns.

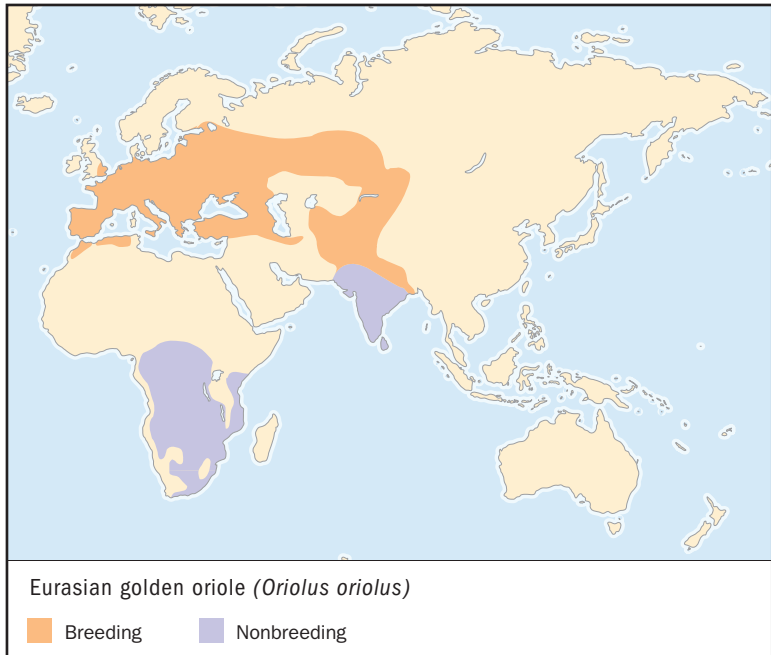
Behavior and reproduction: Australasian figbirds live in communities of loose, noisy, locally nomadic (wandering) flocks of up to thirty to fifty birds in the tree canopy. They often perch high on bare branches and power lines. Their calls are loud, single- or double-note whistles. They are monogamous birds, usually breeding in small groups that defend a small territory during a breeding season from spring to summer (October to February). Nests are shallow, fragile, and saucer-like, and are built of plant fiber and tendrils. Females usually lay three eggs. Both parents share all nesting activities, while other birds may help out.

Australasian figbirds and people: There is no known significant relationship between people and Australasian figbirds.

Conservation status: Australasian figbirds have been able to adapt quickly to habitats that have been altered by people. They are common and under no threat of diminished populations. ■



Australasian figbirds are seasonally nomadic birds, they move around as fruit ripens on trees in different areas. (© Wayne Lawler/Photo Researchers, Inc. Reproduced by permission.)



EURASIAN GOLDEN ORIOLE

Oriolus oriolus

Physical characteristics: Eurasian golden orioles are covered with a golden color except for black wings, tails, and a stripe through the eyes. Females are duller than males with a greenish back.

Geographic range: They range in Europe and far northwest Africa east to Asia Minor, the Caspian Sea, western Siberia, and, in winter, sub-Saharan Africa; Central Asia, from western Siberia south in winter to Afghanistan and Himalayas, peninsular India, and north Sri Lanka.

Habitat: Eurasian golden orioles prefer woodlands and open forests of mostly broadleaf and deciduous mature trees.

Diet: Their diet consists of a variety of insects including hairy caterpillars and a range of small fruits, some seeds, buds, small reptiles, nestling birds, and eggs. They feed from foliage at the tree crowns but also hover near the ground in search of food and perch on branches and fly to food when found.



Male and female golden orioles feed their chicks. They are sometimes assisted by "helper" birds, young birds without their own nest of chicks.

(© H.D. Brandl/OKAPIA/Photo Researchers, Inc. Reproduced by permission.)

Behavior and reproduction: Eurasian golden orioles are solitary birds. They stay in the upper areas of trees. Songs that are sung all year round, but more often by males than females, is a loud, warbled whistle of three or four syllables that is repeated and sung in different ways. When anxious, they give out a grating, drawn-out squalling.

The birds are monogamous. Females produce one brood each year. Males defend territories. The nest is built in the shape of a shallow cup, using plant fiber and stems. It is hung over a thin horizontal fork in high foliage. Females build it, with some early help by her mate, usually in six to twelve days. Females lay three to four creamy or pink-white eggs that are scattered with dark brown and blackish spots. The incubation period is fifteen to eighteen days, and is performed by the female with assistance from the male. Both parents feed the young and sometimes helpers feed them, too. The fledgling period is sixteen to twenty days.

Eurasian golden orioles and people: People in northern Europe like to predict the coming of spring with the arrival of Eurasian golden orioles. They also like the golden plumage and fluted song of the birds.

Conservation status: Eurasian golden orioles do not appear to be threatened in any way. Species in central and eastern Europe seem to be declining, but populations in western Europe seem to be increasing. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, Andrew Elliott, Jordi Sargatal, Jose Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

Web sites:

"Eurasian Golden Oriole." Haryana, India, haryana-online.com. http://www.haryanaonline.com/Fauna/Birds/eurasian_golden_oriole.htm (accessed on July 20, 2004).

family CHAPTER

DRONGOS

Dicruridae

Class: Aves

Order: Passeriformes

Family: Dicruridae

Number of species: 27 species

PHYSICAL CHARACTERISTICS

Drongos are small to medium sized, crow-like birds, usually very dark gray to black all over, a few species being light gray. Black plumage (feathers) shimmers with iridescent green, deep blue, or purple, or the plumage may show spangles, or colored, iridescent spots. The eyes are vivid red or orange, usually a giveaway that the bird is a drongo and not some unrelated black bird. The tail is typically long, often forked, with a complex, ornate shape. The head in most species bears some sort of crest. Body length in drongos ranges from 7 to 15 inches (18 to 38 centimeters) among species.

The beak resembles that of jays, being robust, hooked, notched behind the hooked end, and black in most species. There are long bristles, or retrices (REH-truh-suhz), around the base of the beak. The wings are long and rounded or pointed. The legs, black in most species, are short, with strong feet and toes. Males are slightly larger than females, but both sexes are identical, or show slight variation, in coloration.

GEOGRAPHIC RANGE

Tropical Africa, Madagascar, Asia, Australia, New Guinea, Java, Taiwan, Solomon Islands.

HABITAT

Tropical rain forest, mixed open forest and grassland.

DIET

Drongos eat mainly insects, but sometimes spiders, small birds, and nectar.

phylum

class

subclass

order

monotypic order

suborder

▲ family

BEHAVIOR AND REPRODUCTION

Drongos are notorious for aggressive behavior. They will fiercely defend their nests, and attack or harass predators like birds of prey, hornbills, crows, snakes, and humans. Drongos are accomplished, acrobatic flyers. In one recorded instance, a drongo individual escaped the clutches of a little sparrowhawk, which was chasing it in mid-air, by aerial acrobatics, out-maneuvering the predator.

Drongos forage, search for food, alone, in pairs, or in groups. The birds catch insects in mid-flight, often following larger animals such as deer, cattle, or monkeys in order to catch insects flushed out by the larger animals' motions. They may even follow grass fires, snagging insects escaping the flames. Drongos also glean (pluck) insects from foliage and probe under bark for insects and related creatures. They may also forage in mixed-species flocks of one or more other bird species. Some drongo species just share in the abundance of insects driven out of hiding by the mixed-species flocks. Other species, especially during lean times, join mixed-species flocks but engage in kleptoparasitism, stealing food from other birds. They rob either directly, or, as in the forktailed drongos, by distracting another bird with alarm calls as it sees and closes in on an insect, then zooming in and snagging the insect.

When feeding on insects in mid-flight, drongos use long, wire-like bristles at the base of the beak, to guide insects into the beak. The bristles are modified feathers.

Drongos have an incredibly varied repertoire of voice sounds, even within a species, and often imitate the calls of other bird species. Some species imitate calls of birds of prey, if disturbed at nesting sites, to scare off intruders. One call of the spangled drongo sounds metallic, resembling the plucking of a taut wire.

Drongos form monogamous (muh-NAH-guh-mus) mating pairs. Male and female contribute in building the nest, incubating the eggs (keeping them warm for hatching), and caring for the young. Nests are cup-shaped, and built with a hammock-style support, hanging from horizontal tree branches or forks. Monogamous pairs fiercely defend their territory, nest, and young. Other than those few facts, very little is known about other details of breeding behavior among drongos.

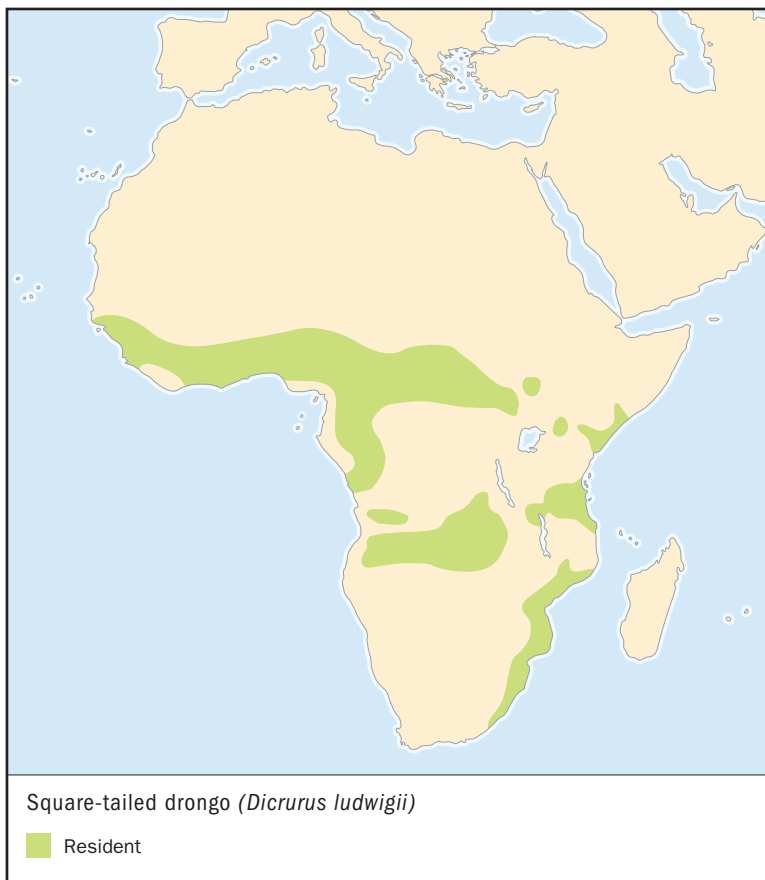
DRONGOS AND PEOPLE

There is little interaction between drongos and humans.

CONSERVATION STATUS

The World Conservation Union (IUCN) lists two drongo species as Endangered, facing a very high risk of extinction, and four as Near Threatened, in danger of becoming threatened with extinction. Five of the six listed species live on small islands—Aldabra, Andamans, Comoros, Principe, and Mayotte—the sixth on a much larger island, Sumatra. The small islands have lost most of their original habitat, while Sumatra has lost half of its original habitat.

SPECIES ACCOUNTS



SQUARE-TAILED DRONGO *Dicrurus ludwigii*

Physical characteristics: The body length is 7.5 inches (19 centimeters). No weights are recorded. The plumage of males is mostly black with a deep blue sheen, the tail has a small notch, the underwing bears white-tipped feathers. The bill is black, the eyes an intense red, black legs and feet. The female is colored similarly but the overall coloring is duller.

Geographic range: Square-tailed drongos live in Africa south of the Sahara.

Habitat: These birds are found in lowland and mountain tropical rainforest.

Diet: Square-tailed drongos eat mainly insects, also nectar.

Behavior and reproduction: Individuals forage alone, in pairs, and in association with other bird species that forage in flocks. It is often kleptoparasitic on other foraging birds. When foraging alone, a square-tailed drongo sits on a branch, waiting for an insect to fly within striking distance. When it does, the bird flies off the branch and snags the insect in mid-flight.

Square-tailed drongos have loud voices with many variations of sounds produced, generally a jumbled string of tweets, whistlings, and twangings. Like most drongo species, the square-tailed drongo can imitate the voices of other bird species.

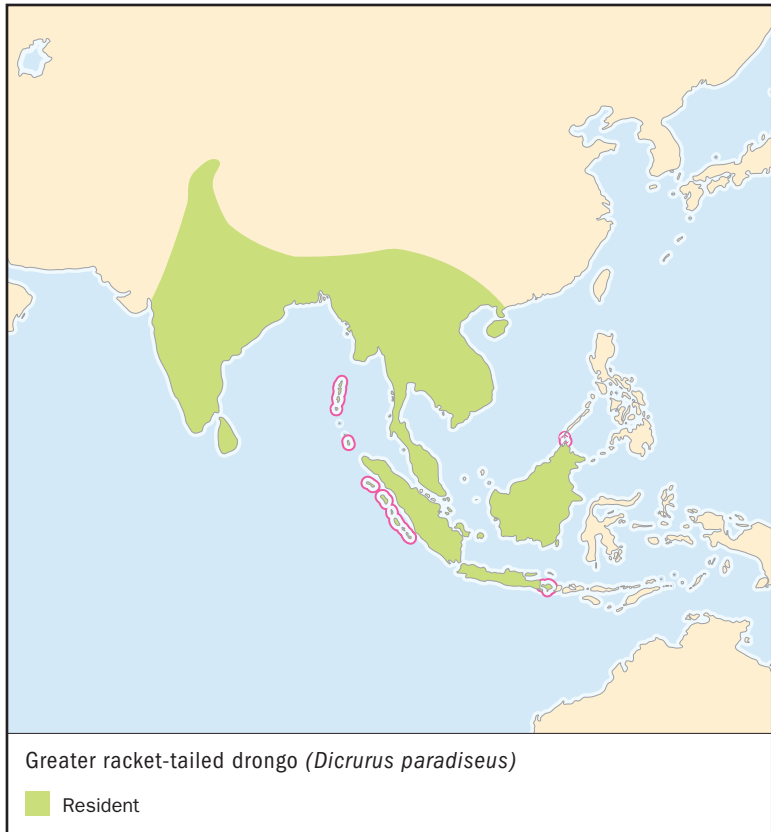
Square-tailed drongos form monagamous breeding pairs, and both parents incubate the eggs and care for the young. The female lays two or three eggs. The nest is a small cuplike structure made of leaves, small twigs, plant fibers, spider webs and lichens. The nest is hung like a hammock from a tree branch.

Square-tailed drongos and people: There is little interaction between square-tailed drongos and people.

Conservation status: These birds are not threatened. ■



When foraging alone, a square-tailed drongo sits on a branch, waiting for an insect to fly within striking distance. When it does, the bird flies off the branch and snags the insect in mid-flight. (Illustration by Brian Cressman. Reproduced by permission.)



GREATER RACKET-TAILED DRONGO

Dicrurus paradiseus

Physical characteristics: The body length is 13 inches (33 centimeters). The plumage is black all over with iridescent shades of blue on the upper wings. The head bears a crest of feathers that begins at the upper base of the beak. The eyes are bright red. The bill is gray. The tail is as long as the body, forked into two narrow, almost wire-like feathers, each of which flares into a rounded shape at the tip, thus the “racket-tail.”

Geographic range: Greater racket-tailed drongos live in all of India, Sri Lanka, Andaman and Nicobar Islands, into Southeast Asia, including southwestern China, Hainan Island, Sumatra, Java, and Borneo.

Habitat: These drongos are found in tropical rainforest.

Diet: These birds eat insects, including moths, termites and dragonflies. Also lizards, small birds and nectar.

Behavior and reproduction: There is limited information. The species forms monogamous pairs, female and male sharing in incubating the clutch of up to three eggs, and feeding the young. The parents savagely defend the nest and young. The nest is cup-shaped and built in at the fork of a tree branch.

Greater racket-tailed drongos and people: There is no significant interaction between greater racket-tailed drongos and people.

Conservation status: These birds are not threatened. ■

FOR MORE INFORMATION

Books:

Goodman, Steven M., and Jonathan P. Benstead. *The Natural History of Madagascar*. Chicago: University of Chicago Press, 2003.

Kavanagh, James. *African Birds*. Chandler, AZ: Waterford Press, 2001.

Morris, P., and F. Hawkins. *Birds of Madagascar: A Photographic Guide*. New Haven, CT: Yale University Press, 1998.

Pizzey, G., and F. Knight. *Field Guide to the Birds of Australia*. Sydney, Australia: Angus and Robertson, 1997.

Strange, Morten. *Birds of Southeast Asia: A Photographic Guide to the Birds of Thailand, Malaysia, Singapore, the Philippines and Indonesia*. London: New Holland, 1998.

Strange, Morten. *A Photographic Guide to Birds of Malaysia and Singapore: Including Southeast Asia, the Philippines and Borneo*. Singapore: Periplus, 2000.

Periodicals:

Duckworth, J. W. "Mobbing of a Drongo Cuckoo *Surniculus lugubris*." *Ibis* 139, no. 1 (1997): 190–192.

Herremans, M., and T. D. Herremans. "Social Foraging of the Forktailed

Drongo *Dicrurus adsimilis*: Beater Effect of Kleptoparasitism?" *Bird Behavior* 12, nos. 1-2 (1997): 41-45.

Khacher, L. "Mimicry by Grey Drongo *Dicrurus leucophaeus*." *Journal of the Bombay Natural History Society* 94, no. 3 (1997): 569.

Manson, A. J. "Unusual Behaviour of Square-tailed Drongo." *Honeyguide* 114/115, no. 54 (1983).

Nair, M. V. "An Instance of Play Behaviour in Black Drongo *Dicrurus adsimilis* (Bechstein)." *Journal of the Bombay Natural History Society* 92, no. 2 (1995): 266.

Vernon, C. J. "Vocal Imitation by Southern African Birds." *Ostrich* 44, no. 1 (1973): 23-30

Web sites:

"MAGPIE-LARKS Grallinidae." CREAGRUS@Monterey Bay. <http://www.montereybay.com/creagrus/magpie-larks.html> (accessed on July 20, 2004).

NEW ZEALAND WATTLEBIRDS

Callaeidae

Class: Aves

Order: Passeriformes

Family: Callaeidae

Number of species: 2 species

family

CHAPTER

PHYSICAL CHARACTERISTICS

The New Zealand wattlebirds' common name is based on their "wattles," little, drooping flaps of brightly colored skin that decorate their faces just behind the beaks, in pairs, on either side of the throat. Plumage (feathers) in adult wattlebirds is medium blue-gray in the kokako and near-black with red-brown areas in the saddleback. Both sexes within a species have similar colorings, and all species have brightly colored wattles. The wings are short and rounded, and all species are poor flyers, able only to glide downward from a perch, although all can run, hop and jump along the ground or tree branches and all are good tree climbers. Adult length in both sexes, from beak tip to tail tip, runs 10 to 19 inches (25 to 48 centimeters). Weight is 2.5 to 10 ounces (70 to 380 grams).

GEOGRAPHIC RANGE

Wattlebirds live on both main islands (North and South Islands) of New Zealand and many offshore islands. Wattlebirds are New Zealand endemics, meaning that they are found only there and nowhere else in the world.

HABITAT

Wattlebirds inhabit native temperate forests of New Zealand, which are made up of a mix of hardwoods and podocarps (Southern Hemisphere conifers).

DIET

Wattlebirds eat mostly insects, including insect larvae (LAR-vee), wetas (giant New Zealand crickets), fruits of native trees,

phylum

class

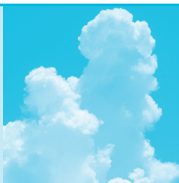
subclass

order

monotypic order

suborder

▲ family



WETAS: BIG, FAT CRICKETS

Among the more exotic food items that New Zealand wattlebirds prey upon is a sort of creature as unique to New Zealand as the wattlebirds. They are wetas, giant crickets that can grow larger than mice. Most weta species are omnivorous, just as are most mice species, eating mostly plant material with some insect prey, but a few species have become more or less completely carnivorous. They are no sort of threat to human beings.

fern fronds, and leaves. On Cuvier Island, a small bird, the fantail, has taken to following foraging saddlebacks, snagging various flying insects escaping from the disturbances made by the saddlebacks. Since the saddlebacks eat noisily while producing a small rain of shredded bark and leaves, and occasionally call out during feeding, they are easy to find.

BEHAVIOR AND REPRODUCTION

Wattlebirds spend their days foraging mainly for insect food in forest trees and in the leaf litter on forest floors. They are poor fliers but quick, efficient ground runners and tree climbers. Since they had little to fear in the way of ground predators before the arrival of humankind, flight became less of a necessity for the wattlebirds' ancestors in New Zealand, so that they were freed from

having to consume the enormous amounts of energy needed for flying.

Saddlebacks breed from October into January. The female builds a nest of twigs and grasses in a rock crevice or a hollow in a tree, then lays two light gray or whitish eggs, which the female incubates for twenty days. The male feeds the female while she is nesting, and both parents feed the chicks. The chicks fledge at twenty-one days of age. Kokako pairs breed from November through February and raise up to three clutches of chicks over the course of one year.

Wattlebirds sing to attract mates and establish and keep territory. Their singing has been described as similar to organ music, haunting, melodious, and complex.

NEW ZEALAND WATTLEBIRDS AND PEOPLE

One species, the huia, went extinct, died out, in the early twentieth century. Maori chiefs and nobles wore huia feathers as symbols of office and kept them in specially carved boxes. These same feathers eventually became fashionable as hat decorations in Europe. Traders offered bounties to native people to hunt, kill, and bring back huia feathers for export. The last sighting of huias is generally listed as having been in 1907, but

William Cobeldick, a forest ranger, claimed to have spotted a huia pair in Urewera National Park in 1924.

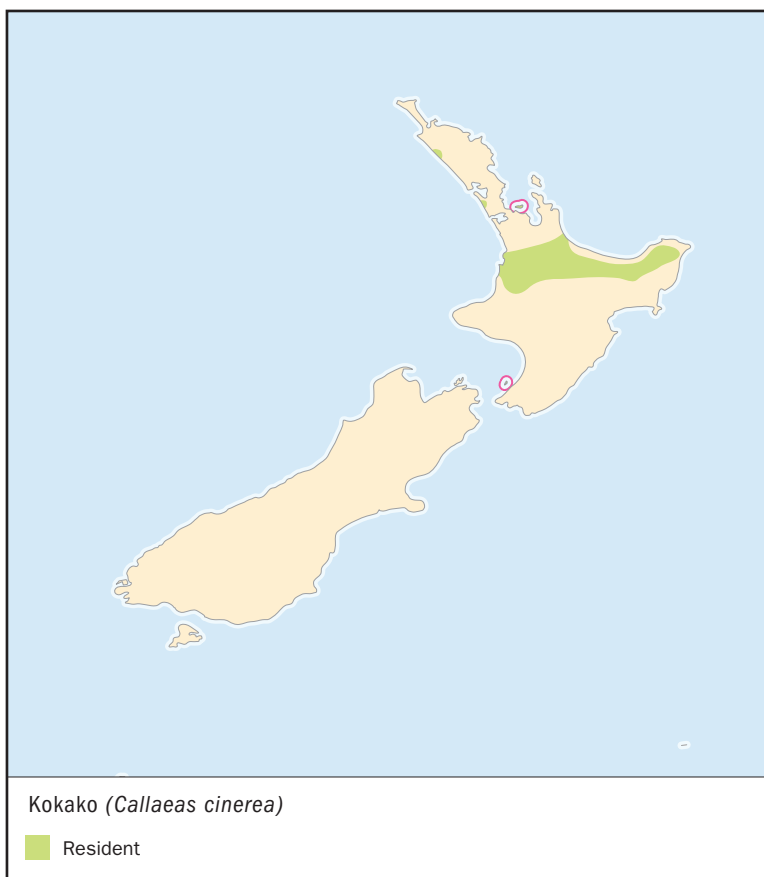
CONSERVATION STATUS

The huia and the South Island subspecies of kokako are extinct. The North Island subspecies of the kokako and the saddleback looked likely to follow until work on the part of the government of New Zealand brought about an increase in their populations since the 1960s. According to the World Conservation Union (IUCN), the kokako is listed as Endangered, facing a very high risk of extinction, and the saddleback is Near Threatened, in danger of becoming threatened with extinction.

Once inhabiting large stretches of forest on the mainlands and some islands, saddlebacks are no longer found on the mainland. Of the South Island subspecies, only 650 individuals were still alive in the early 1960s, and confined to Big South Cape, Pukeweka, and Solomon Islands. The North Island subspecies lived only on Hen Island.

In 1964, the New Zealand Wildlife Service (NZWS) captured a number of North Island saddlebacks on Hen Island, then released them on nearby Whatapuke Island, where any introduced predators had been exterminated. The new colony proved successful. Rats had gained a foothold on Big South Cape Island, so, during the same year, the NZWS transferred thirty-six saddlebacks from Big South Cape Island to other, pest-free islands. That modest number has since increased its population to over 700. The North Island saddleback now inhabits nine large islands. The South Island saddleback lives on eleven smaller islands.

SPECIES ACCOUNT



KOKAKO *Callaeas cinerea*

Physical characteristics: Also commonly called the blue wattled crow, the cinerous wattled bird, and the organbird, the kokako still hangs on in the face of habitat loss and introduced predators. There are two subspecies, populations, the North Island kokako and the South Island kokako. The South Island kokako has not been seen since 1967 and is presumed to be extinct.

The adult head-and-body length of the kokako is 15 inches (38 centimeters) and the adult weight is around 8 ounces (230 grams). The body and head plumage is medium blue-gray, and a black bandit-mask marking surrounds the eyes. The beak and legs are black. The North Island subspecies has blue wattles, while the wattles of the South Is-



land subspecies were orange. The young have pink wattles that assume their proper hues by the time they fledge.

Geographic range: Kokakos live on North Island, New Zealand.

Habitat: These birds are found in native temperate forests of New Zealand, made up of a mix of hardwoods and podocarps (Southern Hemisphere conifers).

Diet: Food eaten in the wild includes fruits, insects and other invertebrates, animals without a backbone, buds, flowers, and nectar. Food choices and amounts consumed vary according to season. Fruit makes up about half the amount of food consumed during three-fourths of the year.

Behavior and reproduction: Kokakos forage during the day among forest trees from the highest reaches to about 9 feet (2.7 meters) from the ground.

Single kokakos and kokako male and female mated pairs begin their territorial songs at dawn, from treetops and tops of ridges. After fanning wings and tail, they warm up with some preliminary buzzing and meowing sounds, then explode into fantastically complex organ-like music. Soon, other kokakos answer, their music partly repeating that

The female kokako incubates the eggs and feeds the young, and the male brings her food while she is sitting on the nest. (Frank Lane Agency/G.M./Bruce Coleman Inc. Reproduced by permission.)

of the first singers but with some improvisations of their own. People privileged to hear this rare natural music have often described it in almost supernatural terms as an unforgettable experience.

Kokako pairs breed from November through February, although in years of unusual food abundance that period may begin in October and extend until May. Pairs have been known to raise up to three clutches of chicks in a year's time. The female does most of the nest building, in a tree, up to 100 feet (30 meters) above the ground. The male helps by occasionally bringing in building materials. The nest is well hidden and complex. The female begins with a twig framework, over which she builds a main mass of intertwined moss, lichen, ferns, and orchids, finally ending the construction by lining the bowl with tree fern scales. The female lays up to three pinkish gray eggs, which hatch after an incubation period of eighteen days. The chicks take thirty to forty-five days to fledge, grow their flying feathers, but may remain in the nest, still being fed by the parents, for up to a year. Only the female incubates eggs and cares for the young, although the male feeds the female while she is incubating and feeds the chicks.

Because of the long time spent in the nest by kokako mothers and chicks, they are particularly vulnerable to being killed by introduced mammalian predators. By 1990, at least two-thirds of the population of kokako females had been killed, leaving a surplus of males.

Kokako males sometimes form pairs with other males and a pair will go on and build nests. This behavior may have arisen recently, since throughout the last century, males far outnumbered females, many of which were killed while brooding, and the frustrated male mating urge found this new outlet.

Individual kokakos have been known to live up to twenty years.

Kokakos and people: In addition to being well known for their singing, kokakos are a symbol for conservation in New Zealand and even appear on some of their paper currency. Feathers of the kokako were used to adorn certain Maori garments. In Maori myth, a kokako aided the warrior Maui by transporting water to him in its wattles.

Conservation status: In 1990, the total population of kokakos on North Island was estimated at 1,160, of which only 396 were females, scattered about the island in isolated populations. Through an intensive program of breeding and habitat protection and regeneration, New Zealand's Department of Conservation has enabled the species to increase its numbers and recolonize abandoned habitat on North

Island. By 2003, the population had added about 500 individuals. Thriving colonies have also been established on several satellite islands. ■

FOR MORE INFORMATION

Books:

Birdlife International. *Threatened Birds of the World*. Barcelona and Cambridge, U.K.: Lynx Edicions, 2000.

Field, L. H., ed. *The Biology of Wetas, King Crickets, and Their Allies*. Wallingford, U.K.: CABI Publishing, 2001.

Heather, Barrie, and Hugh Robertson. *Field Guide to the Birds of New Zealand*, rev ed. New York: Oxford University Press, 2001.

Moon, Geoff. *Photographic Guide to the Birds of New Zealand*. London: New Holland Publishers, 2002.

Phillipps, W. J. *The Book of the Huia*. Christchurch, New Zealand: Whitcombe & Tombs, 1963.

Periodicals:

Hooson, S., and G. Jamieson. "Variation in Breeding Success Among Reintroduced Island Populations of South Island Saddlebacks, *Philesturnus carunculatus carunculatus*." *Ibis* 146, no. 3 (July 2004): 417.

McLean, Ian G. "Feeding Association Between Fantails and Saddlebacks." *Journal of Ecology* 7 (1984): 165–168.

Web sites:

The Moa Pages. <http://www.duke.edu/mrd6/moa> (accessed on July 8, 2004).

Royal Forest and Bird Protection Society of New Zealand. <http://www.forest-bird.org.nz> (accessed on July 8, 2004).

MUDNEST BUILDERS

Grallinidae

Class: Aves

Order: Passeriformes

Family: Grallinidae

Number of species: 4 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Members of the Grallinidae family are various colorations of black, white, gray, and brown. The average length of an adult is 8 to 18 inches (20 to 45 centimeters).

GEOGRAPHIC RANGE

Mudnest builders are found in Australia, New Guinea, Timor, and Lord Howe Island.

HABITAT

All but one species of Grallinidae dwell in open space with trees for nesting. The torrent-lark prefers wooded areas near rivers and streams, where it forages for food.

DIET

Mudnest builders eat insects and other invertebrates, animals without a backbone, such as snails and worms. The apostlebird also feeds on seeds.

BEHAVIOR AND REPRODUCTION

Members of the Grallinidae family are monogamous (muh-NAH-guh-mus), and the majority pair with a single mate for their lifespan. Both males and females feed their offspring, and in some species, other group members (usually juveniles) will also feed nestlings.

While paired Australian magpie-larks like to travel with their mates, both apostlebirds and white-winged choughs (CHUFFS) prefer to flock in small groups of up to twenty birds.

MUDNEST BUILDERS AND PEOPLE

Mudnest builders and humans coexist peacefully.

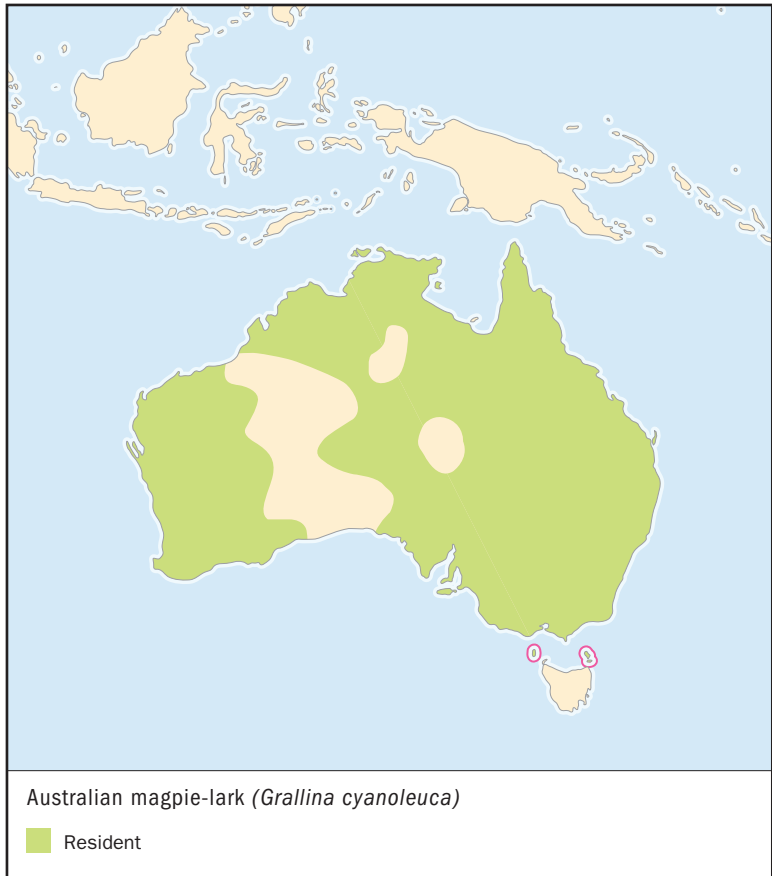
CONSERVATION STATUS

None of the Grallinidae species are currently endangered.



DEFENSIVE DUETS

Pairs of male and female Australian magpie-larks defend their nest and territory with a song and wing display known as an antiphonal (an-TIFF-uh-nul) duet. They perch out in the open together, and alternate their distinctive “pee-wee” call. While one calls and the other answers, they both raise their wings high in a display of power to show would-be intruders who’s in charge.



SPECIES ACCOUNT

AUSTRALIAN MAGPIE-LARK *Grallina cyanoleuca*

Physical characteristics: The Australian magpie-lark has a black and white body. The male has a black back, chest, and face, with a white stripe above the eye. The female's face is all white. Both have white markings on their predominantly black wings. The birds' legs are exceptionally long, and adults have white eyes and beaks. Juveniles of the species have plumage coloring similar to adults, but their eyes and bills are white. Adult magpie-larks are 10 to 12 inches (25 to 30 centimeters) in length and weigh an average of 3 to 4 ounces (80 to 115 grams).



Australian magpie-lark males and females take part in nest building, egg incubation, and in feeding their nestlings. (Jen and Des Bartlett/Bruce Coleman Inc. Reproduced by permission.)

Geographic range: The Australian magpie-lark is found throughout Australia (except in desert areas) and in southern New Guinea, Timor, and Lord Howe Island.

Habitat: Australian magpie-larks are highly adaptable birds, and make their home in a wide variety of habitats both near and far from people, including urban, agricultural, and residential areas. When they dwell in forests, it is usually near the edge or in a clearing where there is open space to forage. They choose nest-building locations where there is access to water and therefore mud.

Diet: Magpie-larks forage at ground level for insects, insect larvae, earthworms, and freshwater snails. They will also eat at backyard feeders.

Behavior and reproduction: Like other members of the family, the Australian magpie-lark builds a cup-shaped mud nest lined with soft

grasses and feathers. Male and female magpie-larks are monogamous, and usually stay together throughout their lifespan, breeding each season as a pair. If a male leaves a female after mating for any reason, the female will abandon the nest.

Australian magpie-larks are biparental, meaning that both male and female take part in nest building, egg incubation, and in feeding their nestlings. The female lays a clutch of three to five oval-shaped white-to-pink eggs speckled with brown.

Studies of Australian magpie-lark breeding behavior have found that those pairs of birds who have bred together successfully in previous seasons will raise more fledglings in subsequent seasons than other newly-mated pairs. Researchers attribute this to the fact that established magpie-lark “couples” start breeding earlier in the season, allowing them to fledge multiple broods.

Magpie-larks aggressively defend their nest and surrounding territory, and have been known to attack other birds, animals, humans, and even images of themselves in mirrors or other reflective surfaces when they felt their nest was threatened. Human attacks are rare.

Incubation of eggs takes up to eighteen days, and the young birds fledge about three weeks after hatching. Young birds, and those adults who aren't paired with a mate, travel in large flocks that move northward in fall and winter and south in spring and summer.

Australian magpie-larks and people: The Australian magpie-lark, called the peewee by many Australians because of their “pee-o-wit” call, are not considered agricultural or residential pests. In agricultural areas their presence is often encouraged, as they feed on disease-carrying freshwater snails that can infect sheep and cattle.

Conservation status: Australian magpie-larks are plentiful and not considered threatened. ■

FOR MORE INFORMATION

Books:

Simpson, Ken, Nicolas Day, and Peter Trusler. *Birds of Australia* Princeton, NJ: Princeton University Press, 2000.

Simpson, Ken, and Nicolas Day. *Field Guide to the Birds of Australia*, 4th ed. Ringwood, Australia: Viking O'Neil, 1993.

Periodicals:

Davidson, Steve. "For These Birds, Fidelity's a Lark." *Ecos* (April–June 2000): 36.

Web sites:

"Magpie-Lark." Australian Museum. http://www.amonline.net.au/factsheets/magpie_lark.htm (accessed on June 14, 2004).

WOODSWALLOWS

Artamidae

Class: Aves

Order: Passeriformes

Family: Artamidae

Number of species: 11 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Woodswallows are small, robust, mostly nomadic (wandering) birds. They have a stout body, soft plumage (feathers), brush-tipped tongue, short neck, short legs, weak-grasping feet, short toes, and a short, stumpy tail that is sometimes white-tipped. The bill is blue-gray, long, slightly curved, and sharply pointed with a bluish black tip. Wings are long, strong, and pointed (such that when flying they look like a common starling).

Their generally dullish looking colors consist of mostly grays, with mixtures of white, black, or reddish on the upper parts of the body, and white below, with several species having also russet colors. Woodswallows also have patches of powder down feathers. Unlike other feathers, powder down feathers crumble at the tips into a soft powder that the birds use for grooming. Males and females look alike in appearance. Adults are 4.7 to 7.9 inches (13 to 20 centimeters) long and weigh between 0.5 and 1.6 ounces (13 and 46 grams).

GEOGRAPHIC RANGE

Woodswallows are found in Australia and Tasmania, throughout the islands of the South Pacific region, Southeast Asia, and across south China to India and Sri Lanka.

HABITAT

This family lives in a wide variety of habitats including open forests, woodlands, scrublands, mangroves (groups of tropical evergreen trees located near tidal coasts), edges of forests,

orchards, urban areas, and clearings. In fact, they prefer any habitat that contains plenty of insects.

DIET

Woodswallows eat flying insects, caterpillars, grasshoppers, nectar (sweet liquid that flowering plants produce), and pollen (powdery substance produced by flowering plants that contains reproductive cells). The birds fly to areas that have plentiful insects to eat. They forage primarily by flying high and sweeping up flying insects but, also at times, by dropping from tree limbs to capture prey on the ground. Their brush-like tongue enables them to lap up nectar and pollen when it is available within its environment (in a style similar to honeyeaters).

BEHAVIOR AND REPRODUCTION

Woodswallows are highly social and swiftly flying birds. When not foraging, they often are seen preening (grooming feathers with bill) each other and perching together, clustered together in large numbers on visible tree branches, wires, utility poles, and other such objects. Although clusters of more than 100 have been recorded, most numbers are in the range of fifteen to twenty. Most species remain in the same area all year-round, but at least three species are widely nomadic; that is, they like to wander in (sometimes) mixed species flocks of 100 or more, often traveling from tropical to temperate (mild) environments at different times of the year. Sometimes, at night, they roost as a community, with dozens of birds huddled together, often on the trunk of a tree or in a hollow. In winter, they often join mixed species flocks in order to forage. They have no true song, but do communicate with a soft twittering call that is sounded almost all of the time while foraging for insects. When predators are nearby, woodswallows often mob about them, frequently attacking them, while making harsh calls in the attempt to drive them away.

Woodswallows are monogamous (muh-NAH-guh-mus; having one mate) birds, becoming less social while in their breeding periods. Their courtship, which is usually begun at the start of rainfall in arid, dry, regions, may involve one bird presenting the other one with a piece of food. Later, one of the pair will start to flutter its partly opened wings and to rotate its spread-out tail. The other partner will respond with similar actions for up to a minute or so. The male will then fly to the female in order to mate. They nest in loose colonies (large groups of birds

that live together and are dependent on each other) during the rainy season. Nests are usually clumsily made, shallow, bowl-like structures made of plant fibers such as rootlets, fine twigs, and grasses, lined with thin green plant stems, and placed in trees, shrubs, stumps, fence posts, and rocky crevices (bird-watchers can often see woodswallow eggs through the bottom of the frail nest).

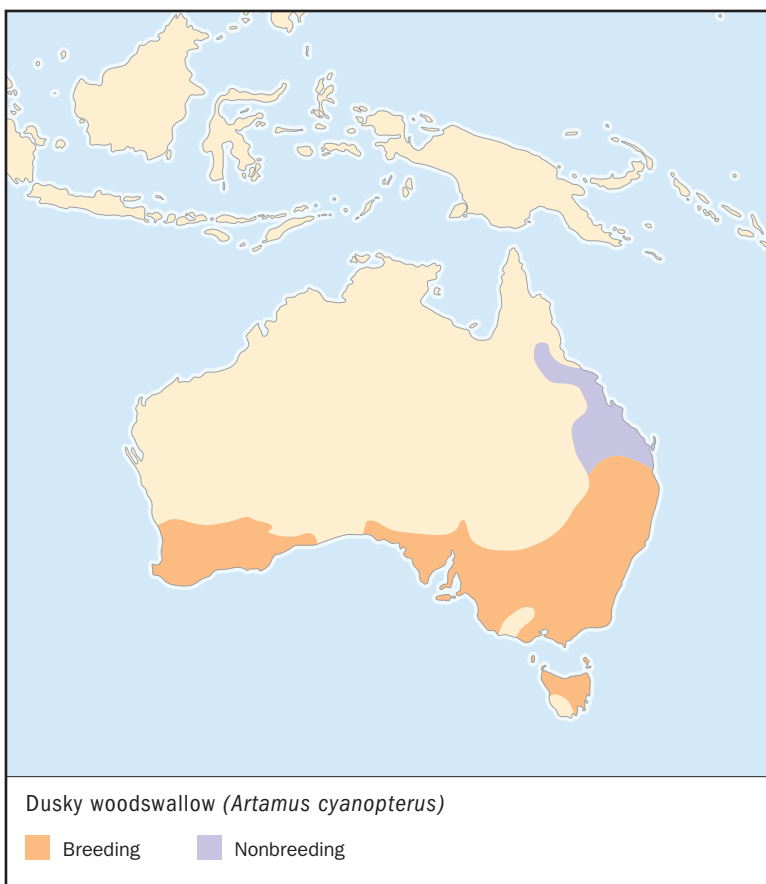
Woodswallows are opportunistic breeders; that is, they take advantage of unpredictable environmental conditions when reproducing. In fact, in arid regions, nests may be built within six days of rainfall and eggs laid within twelve days, which is much shorter in time than the normal nest-building period. Both parents build the nest. Females lay two to four white eggs that are spotted or blotched with a variety of colors, but often reddish. The incubation period (time that it takes to sit on eggs before hatching) is twelve to sixteen days, with both parents helping to incubate (sit on eggs). The fledgling period (time necessary for young bird to grow feathers necessary to fly) is fourteen to twenty days. Both parents, and sometimes one or two helpers, feed and take care of their young, continuing often a month after they can first leave the nest.

WOODSWALLOWS AND PEOPLE

People like to watch the highly visible but soft and modest colorations and daring aerial displays of woodswallows.

CONSERVATION STATUS

Woodswallows are not considered to be threatened. However, species with small habitats are sometimes hurt by adverse changes in their environment and by human development and activities within their habitats.



DUSKY WOODSWALLOW

Artamus cyanopterus

SPECIES ACCOUNT

Physical characteristics: Dusky woodswallows are medium-sized, swallow-like birds that have a smoky blue to smoky brown body; small patch of black in the front of the eyes; dark gray to blackish wings with a white leading edge; dark gray to blackish tail with distinctive white spots at the end; and silvery underwings. The bill is short and pale blue with a black tip. Adults are 6.7 to 7.1 inches (17 to 18 centimeters) long and weigh between 1.1 and 1.6 ounces (31 and 46 grams).

Geographic range: Dusky woodswallows are found in Australia, specifically the eastern and southern portions of the country. They migrate northward for the winter.

Habitat: Dusky woodswallows inhabit open eucalyptus (yoo-kah-LIP-tus) forests (those consisting of tall, aromatic trees) and woodlands, along water courses, and over natural clearings. They especially like rural areas and wet climates.

Diet: Their diet consists of insects, foliage, and nectar. They usually catch flying insects, but will also take prey off the ground.

Behavior and reproduction: Dusky woodswallows are often found in small communal flocks of ten to thirty birds. They are social birds, often roosting in a tight group within a tree hollow or fork. Dusky woodswallows rest during the day, usually perching closely together as a group. They communicate with each other with a chattering call, and will display anxiety when predators or intruders are close by giving out a harsh mobbing call.

Males and females build a small, flimsy, cup-like nest made of plant fibers. The nest, made from August to January, is constructed within

a colony of other dusky woodswallows, often within a tree trunk or other similar structure. A small territory surrounding the nest is defended by the mated pair. Parents may use helpers to take care of their young. Females lay three to four blotched white eggs. The incubation period is around sixteen days. The fledgling period is sixteen to twenty days.

Dusky woodswallows and people: There is no known significance between people and dusky woodswallows.

Conservation status: Dusky woodswallows are not considered to be threatened. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, J. Sargatal, J. Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

MAGPIE-SHRIKES

Cracticidae

Class: Aves

Order: Passeriformes

Family: Cracticidae

Number of species: 14 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Magpie-shrikes are members of the family Cracticidae, which is divided into five groups: peltopses, bristleheads, currawongs, Australian magpies, and butcherbirds. All are black-and-white or blackish birds with strong black feet and booted or scaled legs. The bill is straight, strong, has a tip ranging from hooked and notched to pick-shaped, lacks bristles, is swollen at the upper jaw base, and has nostrils that are deep within bony slits.

Peltopses have a black body with large white patches on face and back; a black bill; a red rump, lower belly, and undertail; and a long tail. Bristleheads have a red head, a black bill, and a dusky-gray short tail. Currawongs are big but slender birds with a black bill, bright yellow eyes, dark gray to blackish plumage (feathers) with white patches in the wings, a long, white-tipped tail, and rounded wings. Australian magpies have black-and-white plumage; black-and-white upperparts, black underparts, pointed wings, short tail, and long legs. Butcherbirds may be all-black to black-hooded with white patches, or all-white with black, gray, and white patterning. These birds have a two-colored bill with a blackish tip and whitish or pale bluish gray base.

Juveniles have similar plumage to adults, although duller and grayer. Fledglings (young birds with recently grown flight feathers), depending on species, may be rusty-brown, washed olive-yellow, or lack clear head patterns. Adults are 6.5 to 22 inches (17 to 55 centimeters) long and weigh between 1.1 and 17.6 ounces (30 and 500 grams).

GEOGRAPHIC RANGE

Magpie-shrikes are found in Australia and New Guinea, along with one species in Borneo.

HABITAT

Magpie-shrikes inhabit wooded regions that include rainforests, savannas (grasslands), and pastures with trees. Peltopses live on the edge of canopies (uppermost vegetation layer of forest) in both mature and re-growth rainforests; bristleheads occupy the mid-strata of mature, lowland alluvial (river and lake systems) and swamp rainforests; currawongs range from dense, tall, wet forests to open, low, eucalyptus-dominated (yoo-kah-LIP-tus; tall, aromatic tree) woodlands; Australian magpies occupy open habitats such as savannas and pastures; and butcherbirds live in the middle and upper strata of forests and woodlands.

DIET

Their diet consists of various small vertebrates and invertebrates (animals with backbones and without backbones), such as insects, grubs, and worms. Magpie-shrikes also eat eggs, nestlings (young birds unable to leave the nest), and berries.

BEHAVIOR AND REPRODUCTION

All five groups make loud flutings, gargles, and bell-like whistles, except for peltopses that make “tick” or “tinkle” sounds. Magpie-shrikes roost in medium-height tree foliage. Australian magpies sing together in groups, and currawongs call out and answer back while in flocks. Australian magpies and currawongs roost in loose groups.

Butcherbirds, bristleheads, and peltopses live in trees, perching for long time periods while looking for prey, and fly rapidly and directly between trees. They pounce on prey, coming to the ground only to catch food. These birds remain in one large foraging territory throughout the year and are solitary birds, rarely gathering in groups larger than families. Australian magpies feed mostly from the ground. They are social birds with complex social organizations that include senior pairs or small breeding groups in permanent desirable territories, while larger groups of juveniles and other non-breeders live in less desirable territories. Australian magpies walk quietly on the ground and fly swiftly and directly. Currawongs are sometimes

social throughout the year in some species, but in other species only gather in large wandering groups when not breeding. They live in all forest levels, fly in easy, wavy movements, and hop and run on the ground.

Breeding for all groups occurs irregularly throughout the year in tropical areas but only from early spring to summer (August to January) in temperate and subtropical regions. More than one brood (young birds born and raised together) can be raised in a year, but usually only one. Most species are monogamous (muh-NAH-guh-mus; having one mate), except for the polygynous (puh-LIJ-uh-nus; having several mates) Australian magpies. They are territorial birds. Only females build nests, which are rough cups of twigs and rootlets lined with finer fibers. The female does all of the incubating (sitting on eggs) while the male takes care of his nesting mate. Clutches (eggs hatched together) are one to five eggs that are cream or pinkish buff to pale green, lined or spotted with red-browns and gray-blacks.

MAGPIE-SHRIKES AND PEOPLE

There is little significance between people and magpie-shrikes other than with Australian magpies, which are known for their aggressiveness and caroling songs.

CONSERVATION STATUS

One species of magpie-shrike, the Bornean bristlehead, is listed as Near Threatened, in danger of becoming threatened with extinction.



BORNEAN BRISTLEHEAD

Pityriasis gymnocephala

SPECIES ACCOUNTS

Physical characteristics: Bornean bristleheads are thick-bodied, dusky to mostly black colored birds. They have a massively hooked bill; a red, mostly bare head with a patch of orange-yellow stubble (small projection-like bare feather shafts that give its name “bristle-head”) on the crown; an edge of scarlet feathering on upper back and breast; a lower breast covered in bristle-like brown and red feathers; a very short tail; and black wings, tail, and bill. Females have chestnut eyes, a red patch on the flanks, and yellow feet. Adults are 10 to 11 inches (26 to 28 centimeters) long.

Geographic range: They are found in Borneo, except for its north-central areas, at elevations below 3,900 feet (1,200 meters).



Bornean bristleheads forage in the forest in groups of six to ten. (Illustration by Dan Erickson. Reproduced by permission.)

Habitat: Bornean bristleheads are found in lowland swamps and rainforests.

Diet: Their diet consists primarily of large insects such as arboreal (living in trees) beetles, grasshoppers, cockroaches, bugs, and larvae (LAR-vee). They take prey mostly from branches and trunks in the middle parts of forests, but will also go to recently cleared areas to find exposed food. Small olive- to plum-sized fruits are occasionally eaten.

Behavior and reproduction: Bornean bristleheads forage through the forest's mid-strata in noisy groups of about six to ten birds. They are very active while foraging, moving with sideward hops while calling loudly, and bending and looking closely for prey. They make direct flights on fast, shallow wings and make noisy calls of whines, honks, and chortles to maintain contacts, which often turn into loud, mixed choruses of various calls.

Bornean bristleheads and people: There is no known significance between people and Bornean bristleheads.

Conservation status: Bornean bristleheads are listed as Near Threatened because of deforestation. ■



GRAY BUTCHERBIRD

Cracticus torquatus

Physical characteristics: Gray butcherbirds are medium-sized, bull-headed birds with a tapered body; patterned plumage of blacks, grays, and whites; black head with white spot (between eyes and upper bill) and collar; dark brown eyes; gray-and-black bill; gray back; white rump; black tail (with white tips) and wings (with white stripes); grayish white underparts; and dark gray legs and feet. Females are smaller than males, generally have more gray on their breast, and have a shorter bill. Juveniles look like adults but have a dull-gray bill without a hook, are patterned with dusky-olive and speckled upperparts, and have buff to yellowish underparts. Adults



Young gray butcherbirds leave the nest after about twenty-eight days, but remain in the breeding territory for about one year to help parents raise future broods. (Illustration by Dan Erickson. Reproduced by permission.)

are 10 to 12 inches (25 to 30 centimeters) long and weigh between 2.8 and 4 ounces (80 and 110 grams).

Geographic range: Gray butcherbirds are found in much of southern and inland Australia from mid-eastern Queensland through southern Australia to northern Western Australia. They are also found in the northernmost parts of the Northern Territory, and in Tasmania.

Habitat: Gray butcherbirds inhabit closed woodlands and open forests of eucalyptus and acacias (uh-KAY-shuhz; flowering trees). They are not found in treeless deserts.

Diet: Their diet consists of mostly insects but also small birds, nestlings, reptiles (such as lizards), mice, fruits, and seeds. They sit on open perches at 6.5 to 40 feet (2 to 12 meters) while searching for prey. Once sighted, they aggressively pounce, mostly from the ground but sometimes while in flight. Feeding is done alone, in pairs, or in small family groups.

Behavior and reproduction: Monogamous mating pairs defend the same breeding territory (20 to 99 acres, or 8 to 40 hectares) all year-round, but have a larger home range. The pair sings back-and-forth with songs of fluted whistles and ringing caws, which are also heard when alarmed or to show aggression. Gray butcherbirds breed from July to August and December to January. They construct (in about four weeks) tight, bowl-shaped nests that are made with sticks and twigs and lined with grasses and other soft fibers. Nests are usually located about 33 feet (10 meters) or less from the ground, within upright forks in outer foliage. Females lay three to five brownish green eggs that are spotted in red-browns and are incubated by the female while the male defends the area. The incubation period (time to sit on eggs before hatching) is twenty-two to twenty-five days. The young are fed by both parents and leave the nest after about twenty-eight days, but remain in the breeding territory for about one year to help parents raise future broods.

Gray butcherbirds and people: Gray butcherbirds feed on food scraps thrown out by people.

Conservation status: Gray butcherbirds are not considered to be threatened. However, many populations are declining because of habitat clearance. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, J. Sargatal, J. Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

BOWERBIRDS

Ptilonorhynchidae

Class: Aves

Order: Passeriformes

Family: Ptilonorhynchidae

Number of species: 20 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ **family**

PHYSICAL CHARACTERISTICS

Bowerbirds are small- to medium-sized, stocky birds that are related to birds of paradise. They are known for the bower-building activities of males within some species. The bower is a shady, leafy, elaborate shelter that the male builds for courtship to females. Bowerbirds show a range of colors in their plumage (feathers) including bold patterns of yellow, orange, green, and lavender with gray or black in many species; plain brown or gray in other species; and a few species that are spotted. In the brightly colored species, males are brighter than females; while in the duller colored species, males and females look alike. There are about fifty to sixty plumage variations within bowerbirds. Some species have only one primary color that blends into their environment, while others have two primary colors, with adult males showing colorful plumages and females being drab. Nestlings (young birds unable to leave the nest) have pinkish, orange-pink, or pale flesh-colored skin. Plumages of juveniles and immature males are similar to those of adult females. Males take five to seven years to fully acquire adult plumage.

Bowerbirds have a stout, powerful bill, except for the thinner, longer bill of regent bowerbirds and the falcon-like mandibles (upper and lower parts of bill) of tooth-billed bowerbirds. The bill is dark brown to black but can be pale; slightly hooked at tip in all species; and can be slightly downcurved, straight, thin and weak, or heavy. Bowerbirds have a black, pale yellow, or orange-yellow mouth; strong legs and feet that are usually dark brown, olive-brown, olive, blue-gray, or black; and toes with hard scales.

Some species have a crest (growth on top of head) of elongated feathers, often brilliantly colored. In other species, the crest forms a complicated mane that hangs over the upper back. Adults are 8.7 to 14.6 inches (22 to 37 centimeters) long and weigh between 0.18 and 0.64 pounds (80 and 290 grams).

GEOGRAPHIC RANGE

Bowerbirds are found primarily on the mainland of New Guinea, but also in Australia and the offshore islands of both countries.

HABITAT

They inhabit rainforests, rainforest edges, moss forests, woodlands, open riverine (located near river) forests, borders between forests and grasslands, open woodlands, savannas (flat grasslands), and semi-deserts.

DIET

Their diet consists of fruits from trees and bushes along with arthropods (invertebrate animals with jointed limbs) and other animals such as insects, spiders, small snakes, worms, frogs, birds, and skinks (small insect-eating lizards). They also eat flowers, leaves, seeds, and sap.

BEHAVIOR AND REPRODUCTION

Depending on species, bowerbirds can be monogamous (muh-NAH-guh-mus; having one mate) or polygynous (puh-LIJ-uh-nus). Monogamous pairs defend a territory, while males do not help with nest building, incubation (process of sitting on eggs), or the raising of young, though they do help with feeding. Males of polygynous species defend only the nearby area of their bowers. They court and mate with many females, being able to supply many females and their young with large amounts of food in territories with plenty of fruits. Unlike any other bird families, a polygynous male clears a courting area where he builds a bower, a complex symmetrical structure of sticks, grasses, and other vegetation, and decorates it with various colorful objects.

The three types of nesting structures made by bowerbirds are: courts (cleared and decorated with leaves); maypole bowers (constructed of branches, sticks, saplings, and orchid stems along with an elaborate and decorated mat underneath it); and

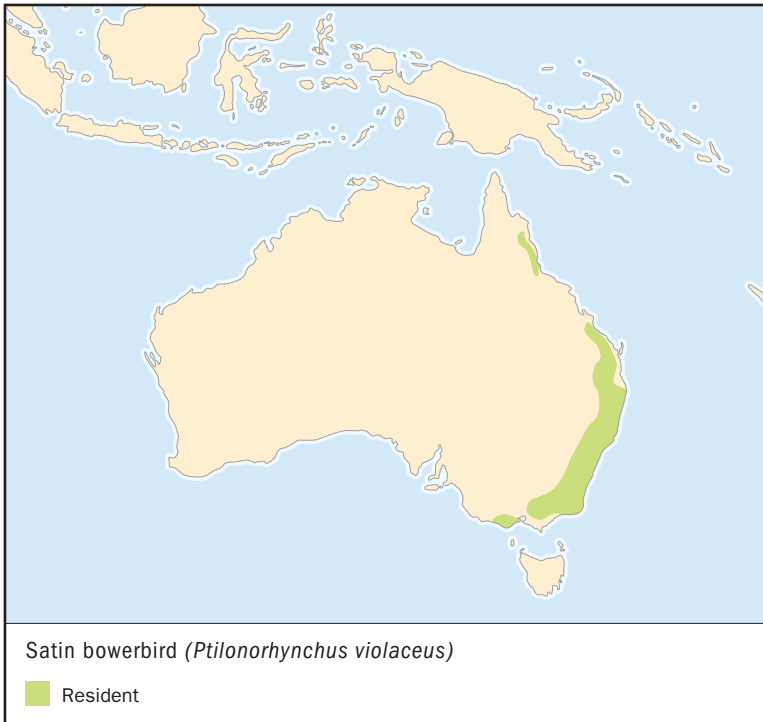
avenue bowers (made of two parallel, vertical walls of sticks or grass stems placed onto a foundation that is set on a ground court that may extend past one or both ends of the bower, making a platform). Courts and bowers are decorated with flowers, leaves, lichens (LYE-kenz), fruits, beetle wing cases, insect skeletons, snail shells, tree resin, bones, river-worn pebbles and stones, and tail feathers of parrots and plumes of adult males of certain birds of paradise. The incubation period (time to sit on eggs before hatching) is twenty-one to twenty-seven days. The nestling period (time necessary to take care of young unable to leave nest) lasts seventeen to thirty days. They live longer than most birds, many twenty to thirty years.

BOWERBIRDS AND PEOPLE

A few groups of native New Guinean and Australian aborigines have used the crests of some male species as clothing decorations, while some natives believe that male bowerbirds use the same techniques as male humans to find a mate; still other natives believe that some species steal human bones for their own ceremonial purposes. Eight species have been bred in aviaries (large enclosures or cages for birds).

CONSERVATION STATUS

One species of bowerbird is considered Vulnerable, facing a high risk of extinction, and one species is listed as Near Threatened, close to becoming threatened with extinction.



SATIN BOWERBIRD

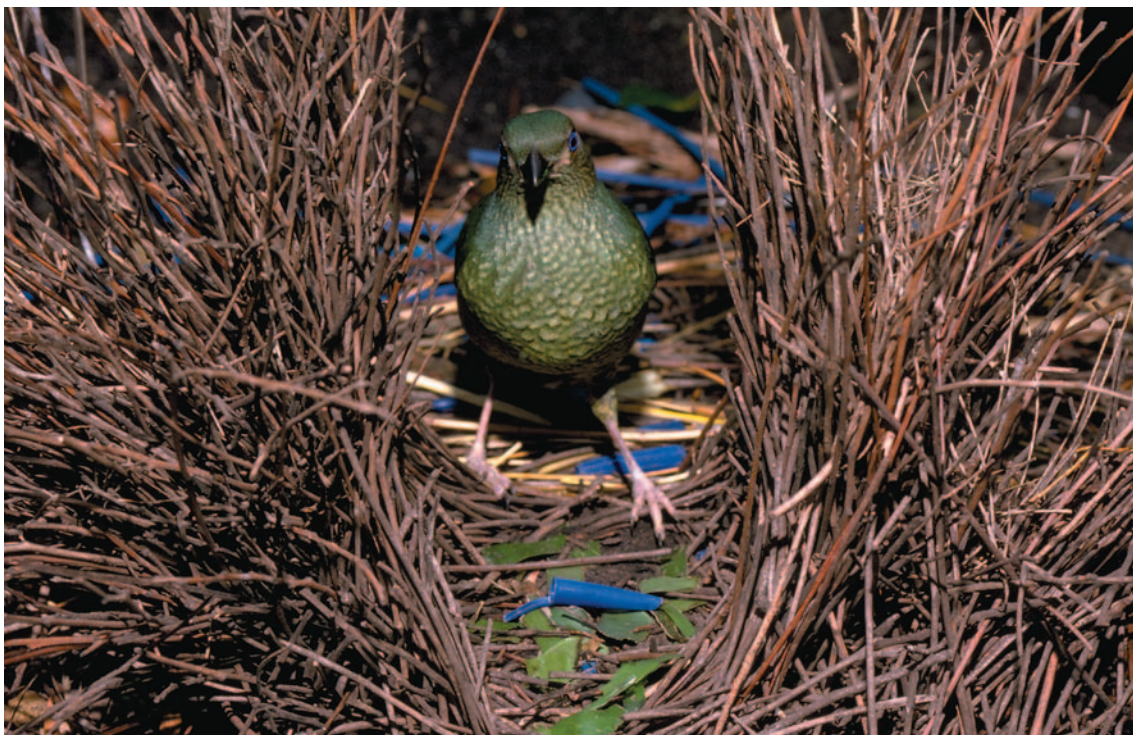
Ptilonorhynchus violaceus

SPECIES ACCOUNTS

Physical characteristics: Male satin bowerbirds have iridescent (lustrous appearance) black plumage, bright lavender eyes, pale yellow bill, and light legs. Females are slightly smaller than males, with green, gray-green, brown, and buff colorings that help to camouflage them (blend into the environment). Adults are about 13 inches (33 centimeters) long, with females weighing between 0.38 and 0.57 pounds (170 and 258 grams) and males weighing between 0.38 and 0.64 pounds (173 and 290 grams).

Geographic range: They are found in eastern and southeastern Australia.

Habitat: Satin bowerbirds inhabit rainforests and eucalypt forests, clearly preferring forest edges and nearby woodlands with dense sapling understories. During winter months, they like more open habitats such as pastures and urban and suburban areas.



A female satin bowerbird visits a male's bower, which he has built and decorated to attract her to mate with him. (© Tom McHugh, National Audubon Society Collection/Photo Researchers, Inc. Reproduced by permission.)

Diet: Their diet consists mostly of fruits but also some insects. They also eat flowers, leaves, herbs, nectar, seeds, and animals including cicadas, beetles, and other arthropods. Satin bowerbirds forage from the forest canopy during summer, but eat from the ground in winter.

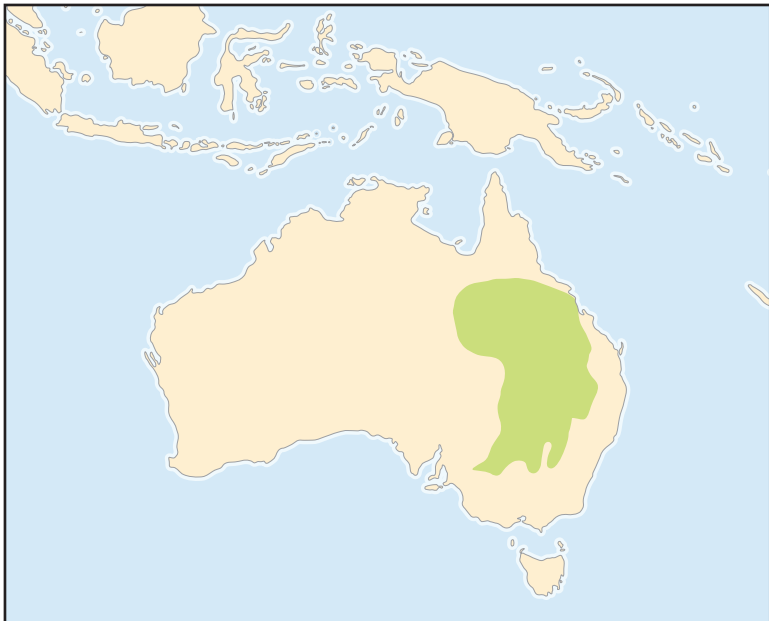
Behavior and reproduction: Males clear off a circular area on the rainforest floor and build avenue bowers to attract females. They are usually built about 990 feet (300 meters) apart when along rainforest edges, but are spaced further apart in rainforest patches and woodlands. Decorative bluish and greenish yellow objects such as flowers, fruits, parrot feathers, snakeskins, snail shells, and human-made objects (such as pen caps) are often used. Bowers are used from late August/September through December (peaking in October). Adult males make their presence known with a clearly-whistled “quoo-eeew,” various harsh and scratchy hisses (called “skraa” calls), and vocal mimicry, often sung within the understory above his bower.

Satin bowerbirds are polygynous. Breeding begins in August/September and continues through February (peaking in November/December). Nests are usually open cup-shaped structures built in trees or bushes, but sometimes in vines and mistletoe, normally at

7 to 130 feet (2 to 40 meters) off the ground. Nests are made with sticks and twigs and lined with green and dry leaves. Females lay one to three colored and blotched eggs. The incubation period is twenty-one to twenty-two days. The nestling period is seventeen to twenty-one days.

Satin bowerbirds and people: Male satin bowerbirds often remove people's jewelry, keys, and other items in order to decorate bowers.

Conservation status: Satin bowerbirds are not threatened. They are commonly to reasonably abundant birds in their current habitats, but have lost much territory to human land use. ■



Spotted bowerbird (*Chlamydera maculata*)

 Resident

SPOTTED BOWERBIRD

Chlamydera maculata

Physical characteristics: Spotted bowerbirds look similar to song thrushes, being relatively plain in appearance. They are mottled brown with a lilac to pink bar across the back of the neck. This vivid bar, which easily recognizes them, is erected into a crest-like peak during times of anxiety or excitement. Adults are 10.6 to 12.2 inches (27 to 31 centimeters) long, with females weighing between 0.27 and 0.36 pounds (124 and 162 grams) and males weighing between 0.28 and 0.33 pounds (125 and 150 grams).

Geographic range: Spotted bowerbirds are found in the interior of Queensland south of 20 degrees south latitude, except the far west and southwest; interior of west and central New South Wales, except the far western border country; and extends a short way into the northwest corner of Victoria and just into South Australia along the Murray River system. They are found from sea level to about 1,640 feet (500 meters).



Habitat: Spotted bowerbirds are found among brigalow (Australian acacia tree that grows in semiarid regions) and open eucalyptus woodlands, with a preference for riverine woodlands.

Diet: They eat fruits, flowers, leaves, seeds, and arthropods. Nestlings are fed mostly grasshoppers.

Behavior and reproduction: Spotted bowerbirds build avenue bowers beneath low bushes or shrubs. The nests are made from grasses and are often 3,300 to 6,600 feet (1,000 to 2,000 meters) apart from each other. The walls are about 7.8 to 19.7 inches (20 to 50 centimeters) high. Up to 1,000 or more decorations such as berries, seedpods, pebbles and stones, bones, snail shells, and glass are attached to the bowers. Adult males occasionally make loud, harsh churrings and other notes (including vocal mimicry) in order to make themselves known.

Spotted bowerbirds are polygynous. Breeding occurs during July through March (peaking from September to February). Males make a sparse open cup-like nest in trees and bushes, often 10 to 40 feet (3 to 12 meters) off the ground. The loose bulky foundation for nests

Spotted bowerbirds build avenue bowers with walls as tall as 7.8 to 19.7 inches (20 to 50 centimeters) high. The male adds up to 1,000 or more decorations to his bower. (Frithfoto/Bruce Coleman Inc. Reproduced by permission.)

are made of dead twigs and sticks, with fine twiglets and (sometimes) dried grass stalks used for the nest. Males spend much time watching and tending to their bowers. Two to three eggs are laid. The incubation and nestling periods are unknown.

Spotted bowerbirds and people: People often cage spotted bowerbirds within avaries. The birds frequently steal items from homes, camps, and vehicles for decorating their bowers. People often kill them when they become pests within gardens and orchards.

Conservation status: Spotted bowerbirds are not considered to be threatened. They have declined in some areas because of illegal hunting and killing of the birds by humans, domesticated and feral cats, and foxes, and the widespread clearing and/or modification of habitat. Populations are listed as endangered, however, within the state of Victoria. ■

FOR MORE INFORMATION

Books:

del Hoyo, Josep, A. Elliott, J. Sargatal, J. Cabot, et al., eds. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Forshaw, Joseph, ed. *Encyclopedia of Birds*, 2nd ed. San Diego, CA: Academic Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Perrins, Christopher M., and Alex L. A. Middleton, eds. *The Encyclopedia of Birds*. New York: Facts on File, 1985.

family CHAPTER

BIRDS OF PARADISE

Paradisaeidae

Class: Aves

Order: Passeriformes

Family: Paradisaeidae

Number of species: 42 species

PHYSICAL CHARACTERISTICS

Birds of paradise are known for their bright and beautiful plumage and unique ornamental tail and head feathers. Males are almost universally more colorful than their female counterparts. Most species have a hooked bill that they use to extract insects from dead wood and tree bark. Sizes range from 6.3 to 43.3 inches (16 to 110 centimeters) in length and 0.11 to 1 pound (50 to 450 grams) in weight.

GEOGRAPHIC RANGE

Eastern Australia, Indonesia, and New Guinea and surrounding islands.

HABITAT

The majority of Paradisaeidae species live in the rainforest, ranging from high altitude sub-alpine to lowland; however, one species, the glossy-mantled manucodes, inhabits savanna (or tropical grassland) woodlands as well as rainforest.

DIET

Birds of paradise eat fruits and insects.

BEHAVIOR AND REPRODUCTION

Although a few species of the Paradisaeidae family are monogamous (muh-NAH-guh-mus; having only one mate), the majority are polygynous (puh-LIJ-uh-nus; one male mates with several females). Males choose a display site from which to attract females, either by themselves or in a group of other males

phylum

class

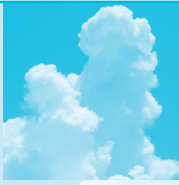
subclass

order

monotypic order

suborder

▲ family



SNAKESKIN NESTS

Some female riflebirds decorate the outside rim of their woven plant and stick cup-shaped nests with cast-off snake skins. Researchers are unsure as to exactly why they do so, but one theory is that the snake skin is a decoy of sorts to keep predators away from the riflebird eggs.

known as a lek. Their display behavior consists of a combination of song and a variety of maneuvers that show off his plumage. Some species spread their wings wide, while others hang upside down. Females approach the solitary or lekking male to mate, then raise and feed their hatchlings on their own.

BIRDS OF PARADISE AND PEOPLE

Many people seek out members of the Paradisaeidae family to witness their elaborate courtship rituals and enjoy their beautiful plumage. Some native New Guinea tribes wear the highly prized feathers of some of the more colorful species.

CONSERVATION STATUS

Four species of the Paradisaeidae family are considered Vulnerable, facing a high risk of extinction, including the blue bird of paradise, Wahnes's parotia, MacGregor's bird of paradise, and the black sicklebill. Eight additional species are listed as Near Threatened, in danger of becoming threatened with extinction: ribbon-tailed bird of paradise, Wilson's bird of paradise, pale-billed sicklebill, yellow-breasted bird of paradise, long-tailed paradigalla, Goldie's bird of paradise, emperor bird of paradise, and the red bird of paradise.

Some species, such as the blue bird of paradise and the black sicklebill, are hunted for their beautiful, bright plumage and/or skins; others are hunted for food. The other major reason for dwindling numbers of certain species is habitat loss due to forest clearing for agriculture and logging.



RIBBON-TAILED ASTRAPIA

Astrapia mayeri

SPECIES ACCOUNTS

Physical characteristics: As is typical with most birds of paradise, the male of the ribbon-tailed astrapia species is both larger and more colorful than the female. Males average 12.6 to 13.8 inches (32 to 35 centimeters) in body length, and 0.30 to 0.36 pounds (134 to 164 grams) in weight. Their plumage is primarily iridescent green, blue, and olive, with a bright green bib and cap and a band of red across the chest. A dark green tuft sits at the top of the beak.

The male ribbon-tailed astrapia's most striking feature is his long, white tail feathers, which extend an additional 8 to 15 inches (20 to 38 centimeters) past his body and are tipped with black at the bottom. Females lack the long tail feathers, and are brown in color.

Geographic range: The ribbon-tailed astrapia lives in the tropical and subtropical rainforests of central Papua New Guinea.



Female ribbon-tailed astrapias are solely responsible for both building the nest and feeding the hatchlings. (Frithfoto/Olympus/Bruce Coleman Inc. Reproduced by permission.)

Habitat: The ribbon-tailed astrapia lives in upper montane (mountainous) and subalpine forests and forest edges.

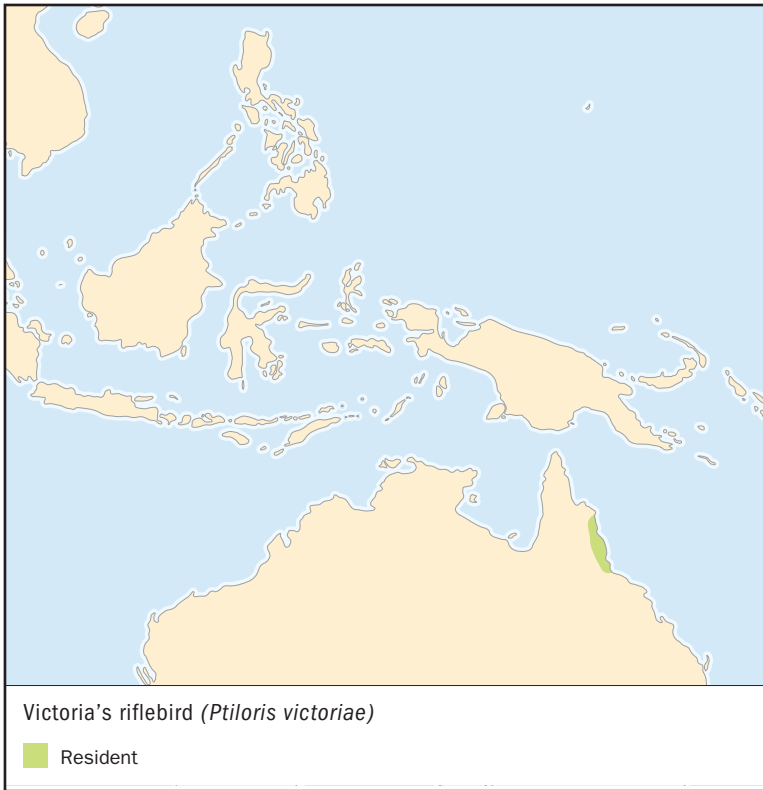
Diet: These birds use their bill to dig insects out of the ground and trees. About half of their daily diet is comprised of fruit.

Behavior and reproduction: Males are polygynous, meaning that they breed with multiple females. They attract mates through a courtship ritual known as lekking, in which they gather together with other male astrapias and sing together, hop from perch to perch, and display their plumage to draw female mates.

Breeding season takes place for the greater part of the year (May through March). Female ribbon-tailed astrapias lay a single egg at a time, which incubates for about three weeks. The females are solely responsible for both building their nest (which is deep and cup-shaped) and feeding their hatchlings.

Ribbon-tailed astrapias and people: Ribbon-tailed astrapias have little contact with humans. However, males are sometimes hunted by native populations for their colorful tail feathers and skins.

Conservation status: These birds are listed as Near Threatened due to habitat destruction and hunting. ■



VICTORIA'S RIFLEBIRD

Ptiloris victoriae

Physical characteristics: The male Victoria's riflebird has a curved bill; a bright green cap, throat, and belly; and a black back and breast band. It also sports short, iridescent blue-green tail feathers. The female of the species has a brown back and head, a spotty buff belly and throat, and a buff stripe above the eye. Average length for both is 9.5 inches (24 centimeters).

Geographic range: The species is found in northeast Queensland, Australia between Townsville and Cooktown.

Habitat: The Victoria's riflebird lives in what is known as the wet tropics region of Queensland. It lives in low-lying rainforest and coastal mangroves.



The Victoria's riflebird uses its hooked bill to dig insects out of tree bark. It also eats some fruit. (Illustration by Emily Damstra. Reproduced by permission.)

Diet: Like many other birds of paradise, the Victoria's riflebird uses its hooked bill to dig insects (such as insect larvae [LAR-vee], cockroaches, spiders, wood lice, and centipedes) out of tree bark. This species also eats fruit.

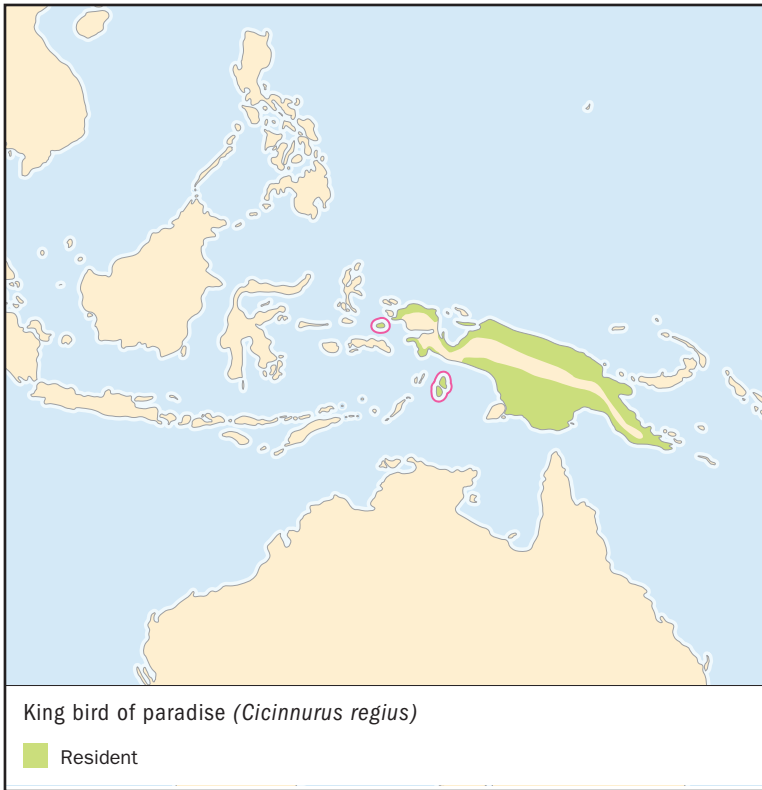
Behavior and reproduction: Breeding season typically lasts from August through January. Male Victoria's riflebirds have multiple female mates. They perform an elaborate courtship "dance" of sorts by perching alone on a tree stump, outstretching their wings, bobbing their head from side to side, and calling loudly to potential mates.

The female builds and tends the nest alone, and lays a clutch of one or two eggs, which incubate for up to eighteen days. She also feeds the nestlings alone until they leave the nest about fifteen days after hatching.

Aside from the loud vocalizations of the Victoria's riflebird, the bird's wings also make a unique rustling sound both in flight and when extending and flapping its wings during its display, which helps birdwatchers track the species.

Victoria's riflebird and people: The Victoria's riflebird has a fairly harmonious relationship with people. Although a good deal of the species' rainforest habitat has been cleared for sugar cane plantations and logging over the past century, the majority of the wet tropics area of Queensland is now protected against logging and habitat destruction by the Wet Tropics World Heritage Area Conservation Act and Protection and Management Act.

Conservation status: The Victoria's riflebird is not considered to be threatened. ■



KING BIRD OF PARADISE *Cicinnurus regius*

Physical characteristics: The male king bird of paradise can be spotted by his brilliant red coloring and two long, wire-like ornamental tail feather shafts, which are tipped at the bottom with a circular swirl of bright green feathers. His underside is white, with a green band across the chest. The male also has a black spot over each eye. Both male and female have blue legs and feet; the female's coloring is much more subdued with an olive-brown back, head, and throat and a variegated buff chest. Both are about 6.3 to 7.25 inches (16 to 19 centimeters) in length, not counting the added length of the male's tail, which may be as long as the body.

Geographic range: The species is found on the New Guinea mainland and on surrounding islands, including Aru, Misol, Salawati, and Yapen.

Habitat: King birds of paradise live in lowland rainforests, forest edges, and secondary forests. The female builds her nest in cavities of lower trees, and the male selects short, shrubby trees to perform his display (or courtship ritual) upon.

Diet: The species eats both fruit and insects.

Behavior and reproduction: Males perform their courtship ritual of persistent calling and displaying of plumage in solitude rather than in a lek (or cluster of other male birds of the species). During the display, they pose with their tail wires extended so that the green disks they are tipped with are over their heads. They may also hang upside down from a tree branch.

Male king birds of paradise are polygynous, and once they mate they move on to attracting the next female, while the female goes on to lay her eggs and incubate and feed her chicks by herself.

King bird of paradise and people: The bright feathers and skins of the male king birds of paradise are sometimes sought after by native men of New Guinea, but for the most part the bird enjoys a harmonious relationship with people.

Conservation status: King birds of paradise are abundant and not considered to be threatened. ■

FOR MORE INFORMATION

Books:

Dickinson, Edward C., ed. *The Howard and Moore Complete Checklist of the Birds of the World*, 3rd ed. Princeton, NJ and Oxford, U.K.: Princeton University Press, 2003.

Frith, Clifford B., and Bruce Beehler. *The Birds of Paradise*. Oxford, U.K.: Oxford University Press, 1998.

Harrison, Colin James Oliver. *Birds of the World*. London and New York: Dorling Kindersley, 1993.

Simpson, Ken and Nicolas Day. *Field Guide to the Birds of Australia*, 4th ed. Ringwood, Australia: Viking O'Neil, 1993.

Periodicals:

Clode, Danielle. "Kicked Out of Paradise." *Nature Australia* 26, no. 12 (Autumn 2001): 15.

Smith, Dwight G. "On Heaven's Wings." *World & I* 12, no. 11 (November 1997): 184.

Web sites:

"2003 BirdLife's Online World Bird Database." BirdLife International. <http://www.birdlife.org> (accessed on June 14, 2004).

"Animals of New Guinea: Birds of Paradise." World Wildlife Foundation. http://www.worldwildlife.org/expeditions/newguinea/spec_bop.cfm (accessed on June 14, 2004).

CROWS AND JAYS

Corvidae

Class: Aves

Order: Passeriformes

Family: Corvidae

Number of species: 123 species

family

CHAPTER

phylum

class

subclass

order

monotypic order

suborder

▲ family

PHYSICAL CHARACTERISTICS

Corvids, members of the Corvidae family, range in length from 7.4 inches (19 centimeters) in Hume's ground jay to the northern raven, which is 22.62 to 26.91 inches (58 to 69 centimeters) long. Hume's ground jays weigh 1.47 to 1.61 ounces (42 to 46 grams). Northern ravens range from 2.02 to 3.43 pounds (.92 to 1.6 kilograms).

The *Corvus* genus of crows includes the crow, raven, jackdaw, and rook. These birds have shiny black plumage, feathers, and harsh calls. Jays are the colorful members of this family. The Eurasian jay and blue jay have blue and white feathers. Magpies are related to jays and plumage (feather) color is often described in the names of these birds, like the green magpie.

Corvids have strong bills. Most birds have black or dark bills, and feathers or whisker-like bristles cover the nostrils of many birds. Members of this family have large feet with strong toes. Birds use their toes to hold onto prey, the food that they hunt.

Corvids have long tails and rounded wings. Wing length varies with the amount of flying a bird does. Long wings are found on birds that migrate, travel long distances from one place to another.

Corvids belong to the Passeriformes, song bird or perching bird, order. While other birds in this order sing sweetly, the corvids' loud, harsh calls are described as screeching or croaking sounds.

GEOGRAPHIC RANGE

Corvids are located throughout most of the world. They are found on all continents except Antarctica.

HABITAT

Members of this large family live in habitats ranging from treeless tundras where land is flat to mountain forests. Birds live in deciduous forests, where trees shed their leaves, and coniferous forests, with cone-bearing evergreen trees. Corvids range in deserts, grassland steppes where there are few trees, and on the edge of rainforests, where heavy rain produces much growth. In addition, corvids live in cities and small villages.

DIET

Corvids mainly eat seeds and nuts. However, they are omnivores, eat animals and plants. These birds are scavengers and take food from places like garbage dumps. Another corvid habit is hoarding food. Birds hide food, often burying it. They stockpile food for times like winter when there is a shortage of seeds and nuts.

BEHAVIOR AND REPRODUCTION

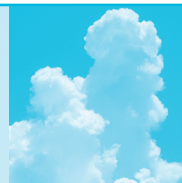
Corvids are family-oriented. Many species travel in a flock, a group of birds. Birds in this group are monogamous (muh-NAH-guh-mus), with a single male mating with a single female. The female corvid lays from two to seven eggs. Females incubate the clutch of eggs, sitting on them to keep them warm.

Older offspring act as cooperative breeders, helping the parents protect and rear young. The male and the older offspring feed the female. They also protect the female from predators like cats, hawks, and people. A mob, usually a group of crows or jays, will fly after hawks and owls. The corvids yell loudly, scolding the birds as they chase them away.

Corvid eggs do not all hatch at the same time. The young birds stay in the nest from five weeks to three months.

CROWS, JAYS, AND PEOPLE

People have mixed feelings about corvids. Birds can imitate human words and have been kept as pets. However,



CLEVER CROWS FIND FOOD

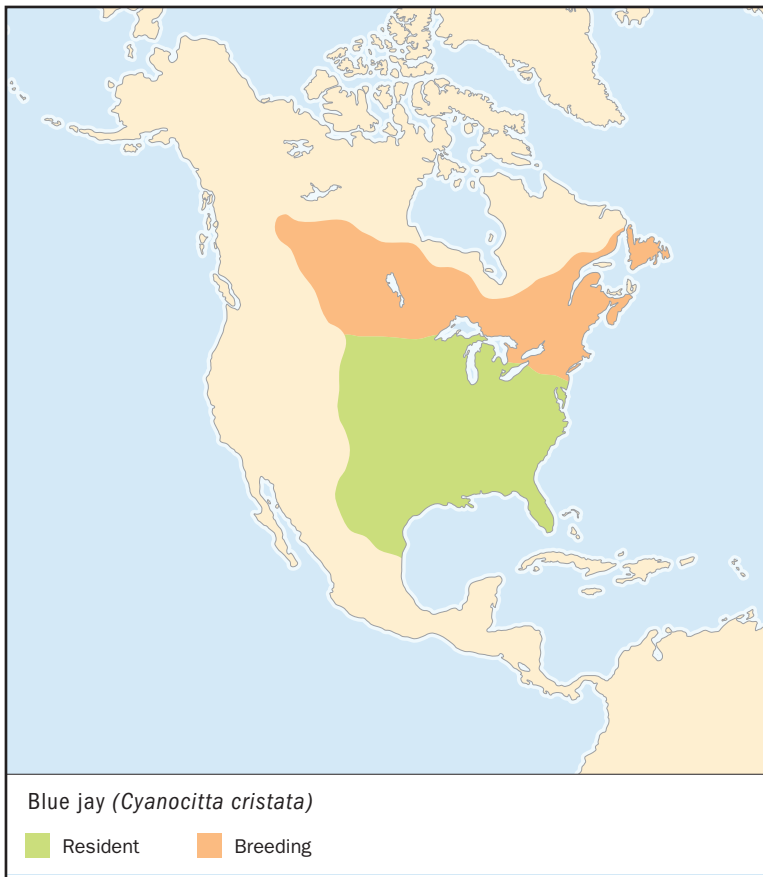
A prime example of crows' intelligence is how birds solve the problem of getting food. Hooded crows in Finland know that lines left in the water by fishermen lead to food. The birds use their bills and feet to pull up the line and get fish. And in New Zealand, New Caledonian crows make tools out of leaves. Birds use the hooked tools to get hard-to-reach insects.

people have also killed corvids to prevent damage to crops and cattle.

Corvid names have long been used to describe negative traits in humans. For example, to crow means to brag, and to rook is to cheat. The little-used verb raven means hunt for prey, and ravenous means extremely hungry. A jay is a foolish person, and a magpie is someone who chatters or collects many things.

CONSERVATION STATUS

According to the World Conservation Union (IUCN), the Hawaiian crow is Critically Endangered, facing an extremely high risk of extinction; four species are Endangered, facing a very high risk of extinction; eight species are Vulnerable, facing a high risk of extinction; and eleven species are Near Threatened, in danger of becoming threatened with extinction. The primary cause is the destruction of habitat as trees are cut down.



BLUE JAY *Cyanocitta cristata*

SPECIES ACCOUNTS

Physical characteristics: Blue jays are colorful members of the crow family. They have a crest of blue feathers that tops their head. Their rounded wings and fan-shaped tails are dark blue with black and white markings. Blue jays have pale gray faces and bodies. There's a "necklace" of black feathers around the throat. The bird has a long black bill, long legs and black feet.

Adult blue jays range in length from 9.36 to 11.7 inches (24 to 30 centimeters). Birds weigh from 2.27 to 3.8 ounces (65 to 109 grams). The wingspan is 16 inches (40.54 centimeters).

Blue jays typically hatch four to five young at a time. (© Gregory K. Scott/Photo Researchers, Inc. Reproduced by permission.)



Geographic range: Blue jays are found east of the Rocky Mountains in the United States and Canada.

Habitat: Blue jays live in woods, parks, and suburbs.

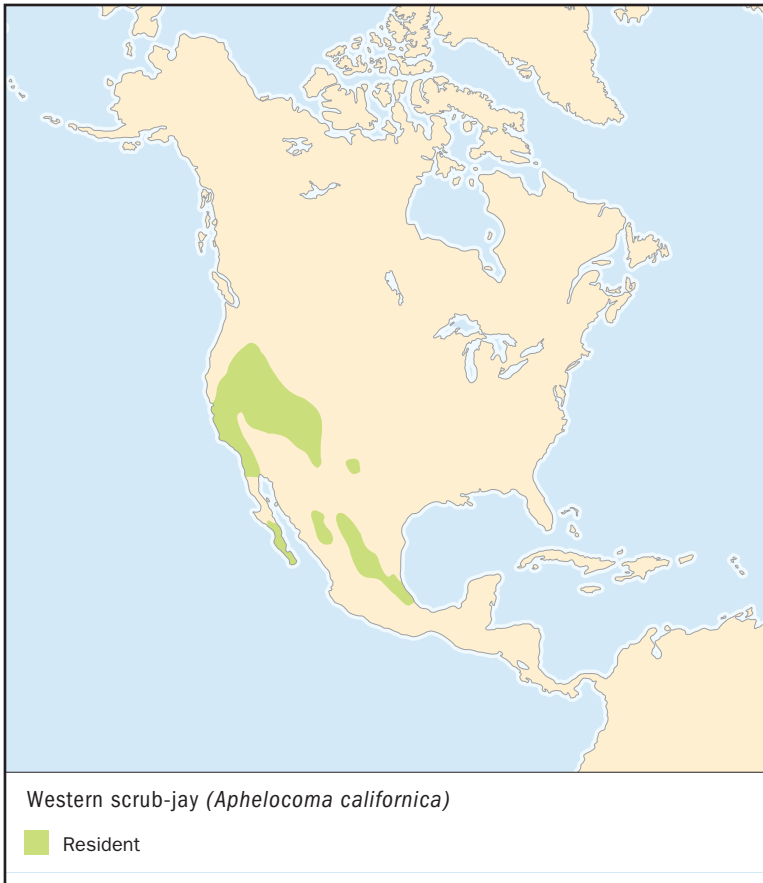
Diet: Blue jays eat insects, nuts, and seeds. During the summer, they steal other birds' eggs. They add acorns to their diet in winter. Blue jays bury some acorns to eat in the future.

Behavior and reproduction: Blue jays frequently travel in small groups. They live in trees and build nests of twigs, feathers, and roots.

Birds are monogamous, and the female lays eggs during the months of March through June. The clutch of four or five eggs hatches in sixteen to eighteen days. Younger birds are grayer than adults.

Blue jays and people: People admire the blue jay's beauty, and Toronto, Canada, named its baseball team the Blue Jays.

Conservation status: Blue jays are not in danger of extinction, dying out. ■



WESTERN SCRUB-JAY

Aphelocoma californica

Physical characteristics: Western scrub-jays look somewhat like blue jays. Both species have dark blue heads, wings, and tails. The scrub-jays do not have feathered crests on their heads. Scrub-jays have white chests, and white coloring on the face that resembles an eyebrow. The throat is white with a blue necklace. There is a blue band on the chest, and the lower body coloring is white, tan, and gray.

The length of western scrub-jays ranges from 10.53 to 12.09 inches (27 to 31 centimeters). They weigh about 3 ounces (85 grams).

Geographic range: Western scrub-jays live in the western United States and northwestern Mexico.

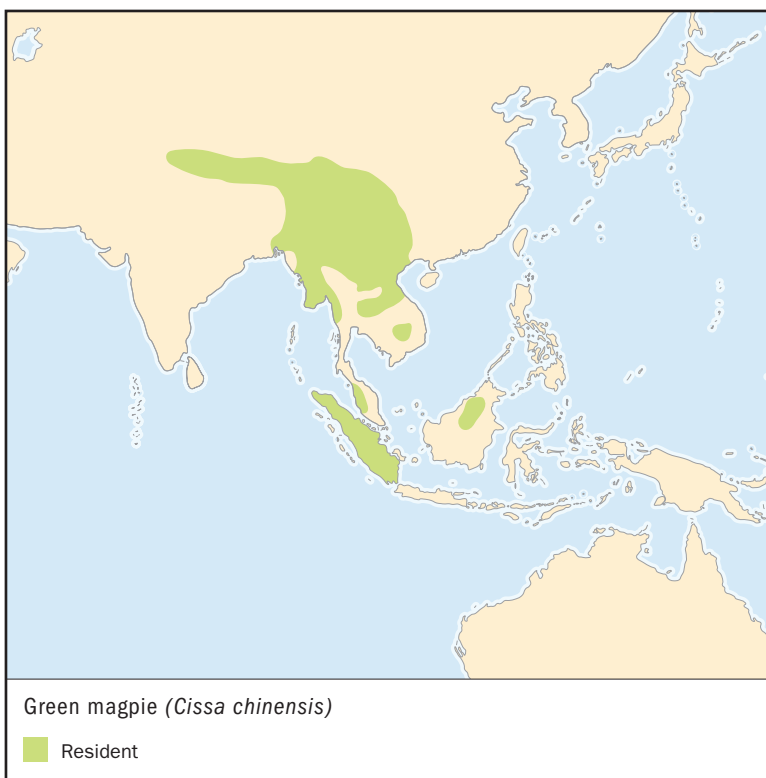
Habitat: Western scrub-jays live in desert areas.

Diet: Western scrub-jays are omnivores. They eat acorns, pine seeds, invertebrates, animals without backbones, like insects, reptiles, eggs and nestlings, mammals, and amphibians, animals able to live on land and in the water.

Behavior and reproduction: Western scrub-jays are solitary breeders. The male and female are not helped by other birds. The female lays two to six eggs from March through May. Females incubate the eggs, which hatch after sixteen to nineteen days. Birds fledge, grow feathers, in approximately eighteen days.

Western scrub-jays and people: Seeds hidden by western scrub-jays grow into trees.

Conservation status: Western scrub-jays are not in danger of extinction. ■



GREEN MAGPIE

Cissa chinensis

Physical characteristics: Green magpies have bright green heads and reddish brown wings. Their bodies are a lighter green, and their long, tapered tails have white tips. Black coloring on the face resembles a mask. Flesh around the eyes is red, and their bills, legs, and feet are also bright red. Green magpies range in length from 14.43 to 15.21 inches (37 to 39 centimeters). They weigh from 4.55 to 4.65 ounces (120 to 124 grams).

Geographic range: Green magpies live on the continent of Asia and are found in India, China, Malaysia, Borneo, and Sumatra.

Habitat: Green magpies live in forests and build nests in vines and in bamboo, which are woody, evergreen trees. Evergreens are coniferous trees that do not undergo seasonal changes.



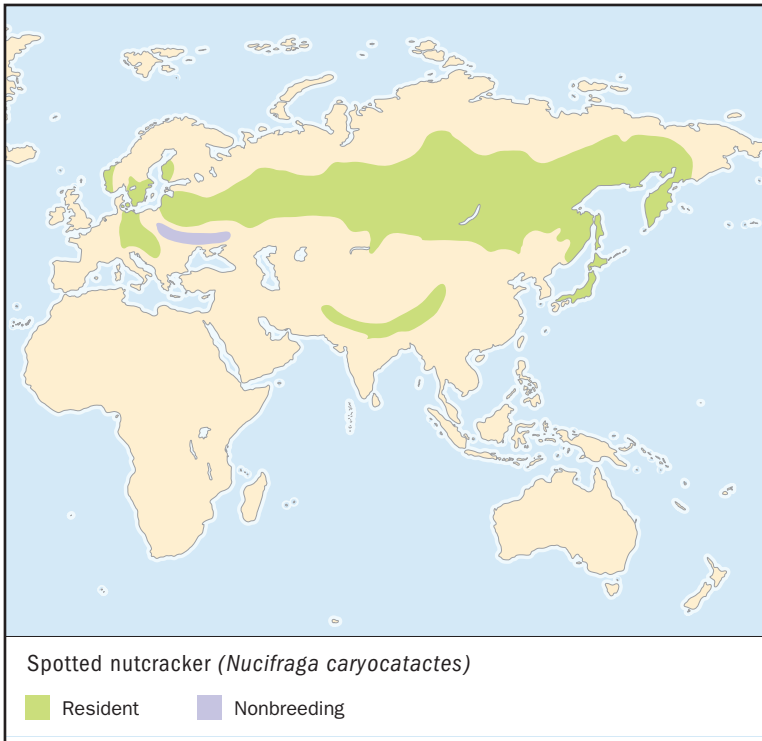
Green magpies hunt for food—insects, small reptiles, young birds, eggs, amphibians, berries, and fruit—on the ground and in trees. (Illustration by Gillian Harris. Reproduced by permission.)

Diet: Green magpies hunt for food on the ground and in trees. The magpies eat insects, small reptiles, young birds, eggs, amphibians, berries, and fruit. Magpies also eat the flesh of recently killed animals.

Behavior and reproduction: Green magpies are solitary breeders. The male and female birds do not receive help, such as protection, from their older offspring. The magpie nest resembles a platform. The female magpie lays three to seven eggs during the months of January through April. Green magpies remain hidden during this time, and it is not known how long it takes for eggs to hatch. Within their habitat, groups of green magpies fly around with other groups of birds.

Green magpies and people: Green magpies, which are also known as cissas, are captured and sold as cage birds.

Conservation status: Green magpies are not in danger of extinction. ■



SPOTTED NUTCRACKER

Nucifraga caryocatactes

Physical characteristics: Spotted nutcrackers are named for their appearance and the way they use their large bills to take the shells off of nuts. There are white spots and streaks in their feathers. The spotted nutcracker's brown body plumage is the color of chocolate. The lower part of the body is white. The wing and tail feathers are a shiny black. There are white tips at the ends of the wings and feathers. The spotted nutcracker's bill, legs, and feet are black.

The length of nutcrackers ranges from 12.48 to 13.26 inches (32 to 34 centimeters). Birds weigh from 4.3 to 7 ounces (124 to 200 grams).

Geographic range: Spotted nutcrackers live in Europe and are found in nations including Switzerland, England, Netherlands, and Scandinavian countries. The birds also range in Japan, China, and other Asian countries.



Spotted nutcrackers have thick bills that they use to open nuts, their main food. (Illustration by Gillian Harris. Reproduced by permission.)

Habitat: Spotted nutcrackers live in coniferous forests, where trees such as pines do not shed their leaves.

Diet: Spotted nutcrackers eat conifer seeds, or nuts, of trees in the pine and spruce families. Larger birds eat the hard-shelled hazel nuts. Spotted nutcrackers get the edible meat inside the shell by hitting the shell with their bill.

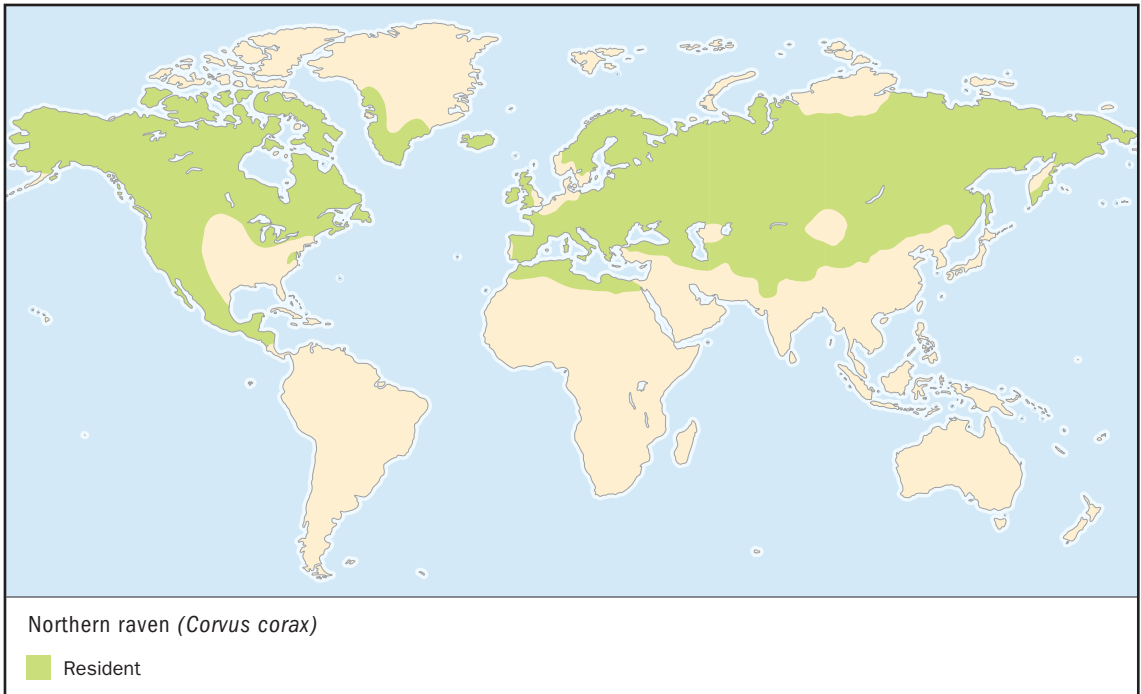
Spotted nutcrackers have thick bills that they use to open nuts. They place the nut between their feet and then begin pecking on the shell. Nutcrackers use their beaks to hit the nut until the shell cracks.

Like other corvids, nutcrackers store food. They bury nuts and seeds to eat at a later time. If no seeds or nuts can be found, nutcrackers eat insects and berries.

Behavior and reproduction: Spotted nutcrackers are solitary breeders. The female lays two to four eggs during March through May. The female incubates the eggs that hatch in eighteen days. Both parents feed the chicks. The young birds fledge after about three weeks. The nestlings remain with their parents throughout the summer or longer.

Spotted nutcrackers and people: Seeds hidden by spotted nutcrackers sometimes sprout into saplings that grow into trees. The spotted nutcracker's habit of hiding food caused the growth of new Swiss pine trees in areas of the European Alps where people had cut down all the trees.

Conservation status: Spotted nutcrackers are not in danger of extinction. ■



NORTHERN RAVEN

Corvus corax

Physical characteristics: Northern ravens have shiny black plumage, black bills, and black legs and feet. These birds have long bills. There are long, pointed feathers around the neck. The length of northern ravens ranges from 22.62 to 26.91 inches (58 to 69 centimeters). Birds weigh from 2.02 to 3.43 pounds (92 to 156 grams).

Geographic range: Northern ravens are found throughout the Northern Hemisphere. In North America they range from Alaska to Greenland, south through Canada, and into the United States and Mexico. In the United States they are typically found west of the Rocky Mountains and along the east coast from Canada to Georgia. Birds also range throughout Europe.

Habitat: Northern ravens live in many different habitats, including the treeless tundra. They choose locations away from people.

Northern ravens live in many different habitats in North America and Europe. They choose locations away from people. (Joe McDonald/Bruce Coleman Inc. Reproduced by permission.)



Diet: Northern ravens eat carrion, the decaying bodies of dead animals. They use their strong bills to rip into dead animals or kill live prey. Ravens also eat plants and berries.

Behavior and reproduction: Northern ravens have long-term mating partners. The female raven lays from three to seven eggs in the spring. Eggs hatch in eighteen to twenty-one days. Birds grow feathers five to six weeks later.

Northern ravens and people: People killed northern ravens because they wrongly blamed ravens for the death of cattle. The raven is a symbol of death and the bird's ability to say words is the subject of Edgar Allen Poe's poem, "The Raven."

Conservation status: Northern ravens are not threatened. ■

FOR MORE INFORMATION

Books:

Stuart, Chris and Tilde. *Birds of Africa From Seabirds to Seed Eaters*. Cambridge, MA: The MIT Press, 1999.

Wade, Nicholas, ed. *The New York Times Book of Birds*. New York: The Lyons Press, 2001.

Periodicals:

Youth, Howard. "The Revered, Reviled Crow Clan." *ZooGoer* 30, no. 3 (2001). Online at <http://nationalzoo.si.edu/publications/zoogoer/2001/3/reviledcrowclan.cfm> (accessed on July 20, 2004).



Species List by Biome

CONIFEROUS FOREST

African broadbill
African pitta
American cliff swallow
American goldfinch
American robin
Anna's hummingbird
Barn swallow
Barred eagle-owl
Belted kingfisher
Black-and-red broadbill
Black-and-white warbler
Black-capped chickadee
Black-capped vireo
Black-crowned barwing
Blue-gray gnatcatcher
Bornean bristlehead
Brown creeper
Brown kiwi
Cedar waxwing
Chaffinch
Chimney swift
Crag martin
Cuban tody
Dollarbird
Dunnock
Dusky woodswallow
Eastern bluebird
Eastern screech-owl
Emu

Fan-tailed berrypecker
Fiery minivet
Fire-breasted flowerpecker
Gray butcherbird
Gray nightjar
Gray parrot
Gray potoo
Green magpie
House sparrow
House wren
Ivory-billed woodpecker
Japanese white-eye
Kirtland's warbler
Kokako
Laughing kookaburra
Little slaty flycatcher
Malaysian honeyguide
Northern bobwhite quail
Northern wryneck
Nuthatch
Oilbird
Orange-breasted trogon
Osprey
Palmchat
Peregrine falcon
Red crossbill
Red-breasted nuthatch
Red-cockaded woodpecker
Resplendent quetzal
Rifleman

Rose-throated becard
Rufous treecreeper
Rufous-browed peppershrike
Rufous-capped nunlet
Rufous-tailed jacamar
Satyr tragopan
Scarlet macaw
Sparkling violet-ear
Spotted nutcracker
Striated pardalote
Whip-poor-will
White-necked puffbird
White-throated fantail
Winter wren
Wrentit
Yellow-bellied sapsucker
Yellow-breasted chat

CONTINENTAL MARGIN

Blue-footed booby
Brown pelican
Great cormorant
Northern gannet

DECIDUOUS FOREST

African broadbill
African pitta
American cliff swallow
American goldfinch

American robin
 Anna's hummingbird
 Arctic warbler
 Asian fairy-bluebird
 Australian magpie-lark
 Baltimore oriole
 Bar-breasted mousebird
 Barn owl
 Barn swallow
 Baywing
 Black bulbul
 Black guan
 Black-and-white warbler
 Black-capped chickadee
 Black-capped vireo
 Blue jay
 Blue-crowned motmot
 Blue-gray gnatcatcher
 Brown creeper
 Brown kiwi
 Bushtit
 Cedar waxwing
 Chaffinch
 Chimney swift
 Coppersmith barbet
 Crag martin
 Crested tree swift
 Cuban tody
 Dollarbird
 Dunnock
 Dusky woodswallow
 Eastern bluebird
 Eastern screech-owl
 Emu
 Eurasian golden oriole
 European bee-eater
 European roller
 Fire-breasted flowerpecker
 Gray catbird
 Gray nightjar
 Gray-crowned babbler
 Great tit
 House sparrow
 House wren
 Ivory-billed woodpecker
 Jacky winter

Japanese white-eye
 Leaf-love
 Northern wryneck
 Nuthatch
 Orange-breasted trogon
 Osprey
 Painted buttonquail
 Peregrine falcon
 Peruvian plantcutter
 Plain chachalaca
 Red-breasted nuthatch
 Red-cockaded woodpecker
 Rifleman
 Rose-ringed parakeet
 Rufous scrub-bird
 Rufous vanga
 Rufous-capped nunlet
 Rufous-tailed jacamar
 Satyr tragopan
 Scarlet macaw
 Southern scrub robin
 Spotted flycatcher
 Striated pardalote
 Tawny frogmouth
 Toucan barbet
 Whip-poor-will
 White-breasted mesite
 White-helmet shrike
 White-necked puffbird
 Wild turkey
 Willie wagtail
 Willow ptarmigan
 Winter wren
 Wood duck
 Yellow-bellied sapsucker
 Yellow-breasted chat
 Yellow-fronted tinkerbird
 Yellowhead
 Yellow-rumped thornbill

DESERT

American cliff swallow
 American mourning dove
 Barn swallow
 Cactus wren

California condor
 Collared pratincole
 Crab plover
 Crested caracara
 Crimson chat
 Egyptian vulture
 Emu
 Gray catbird
 Gray hypocolius
 Greater hoopoe-lark
 Greater roadrunner
 Harris's hawk
 House sparrow
 Malleefowl
 Namaqua sandgrouse
 Northern lapwing
 Ostrich
 Pallas's sandgrouse
 Peregrine falcon
 Peruvian plantcutter
 Rock pigeon
 Snow finch
 Splendid fairy-wren
 Striated grasswren
 Verdin
 Western scrub-jay
 Willie wagtail

GRASSLAND

African broadbill
 African palm swift
 African paradise-flycatcher
 American cliff swallow
 American mourning dove
 American robin
 Anna's hummingbird
 Arctic skua
 Australasian lark
 Australian magpie-lark
 Australian pratincole
 Bar-breasted mousebird
 Barn owl
 Barn swallow
 Baya weaver
 Baywing

Black rail
Black-capped chickadee
Black-capped vireo
Black-crowned barwing
Black-faced sheathbill
Blue bustard
Blue jay
Blue-black grassquit
California condor
Cape sugarbird
Cattle egret
Cedar waxwing
Collared pratincole
Common cuckoo
Common myna
Common waxbill
Corncrake
Crag martin
Crested caracara
Crimson chat
Dollarbird
Eastern phoebe
Eclectus parrot
Egyptian vulture
Emu
Eurasian bittern
European bee-eater
European roller
European starling
European white stork
Fan-tailed berrypecker
Golden-winged sunbird
Gray go-away-bird
Gray hypocolius
Gray potoo
Gray woodpecker
Gray-crowned crane
Great blue heron
Great bustard
Great kiskadee
Green woodhoopoe
Gyr Falcon
Hammerhead
Harris's hawk
Helmeted guineafowl
Hoopoe

Horned lark
House sparrow
Jacky winter
Killdeer
King vulture
Laysan finch
Lesser rhea
Loggerhead shrike
Long-billed curlew
Malleefowl
Northern bobwhite quail
Northern lapwing
Northern raven
Northern wryneck
Ostrich
Painted buttonquail
Pallas's sandgrouse
Palmchat
Peregrine falcon
Peruvian plantcutter
Purple sunbird
Rainbow lorikeet
Red-billed oxpecker
Red-legged seriema
Red-winged blackbird
Rock pigeon
Roseate spoonbill
Rose-ringed parakeet
Rosy-breasted longclaw
Rufous-capped nunlet
Sacred ibis
Sandhill crane
Savanna sparrow
Secretary bird
Shoebill
Small buttonquail
Snowy owl
Song sparrow
Southern ground-hornbill
Southern red bishop
Southern scrub robin
Spotted munia
Sprague's pipit
Stonechat
Tawny frogmouth
Village weaver

White-helmet shrike
White-necked puffbird
Wild turkey
Wrentit
Yellow-fronted tinkerbird
Yellow-rumped thornbill
Zebra finch

LAKE AND POND

African jacana
American anhinga
American cliff swallow
American white pelican
Australian magpie-lark
Barn swallow
Baya weaver
Belted kingfisher
Black tern
Black-and-red broadbill
Black-capped donacobius
Canada goose
Chaffinch
Common iora
Common loon
Crag martin
Eurasian bittern
Gray wagtail
Great blue heron
Great cormorant
Great crested grebe
Greater flamingo
Greater thornbird
Hammerhead
Hoatzin
Mallard
Mute swan
Northern wryneck
Osprey
Peregrine falcon
Pheasant-tailed jacana
Red-throated loon
Roseate spoonbill
Rosy-breasted longclaw
Rufous hornoro
Sacred ibis

Shoebill
Song sparrow
Sunbittern
Sungrebe
Village weaver
Western grebe
Wood duck
Yellow-breasted chat
Zebra finch

OCEAN

Arctic skua
Blue-footed booby
Chatham mollymawk
Common diving-petrel
Common iora
Common loon
Common murre
Emperor penguin
Great auk
King eider
Laysan albatross
Laysan finch
Macaroni penguin
Magellanic penguin
Magnificent frigatebird
Manx shearwater
Northern fulmar
Northern gannet
Puffin
Red-throated loon
White-tailed tropicbird
Wilson's storm-petrel

RAINFOREST

African paradise-flycatcher
African pitta
Albert's lyrebird
Amazonian umbrellabird
American cliff swallow
Apapane
Arctic warbler
Asian fairy-bluebird
Australasian figbird
Baltimore oriole

Barn owl
Barn swallow
Barred antshrike
Bishop's oo
Black-naped monarch
Blue-crowned motmot
Bornean bristlehead
Buff-spotted flufftail
Cape batis
Common bulbul
Common cuckoo
Common iora
Common sunbird-asity
Common trumpeter
Coppery-chested jacamar
Crag martin
Cuban tody
Dodo
Eclectus parrot
Fan-tailed berrypecker
Feline owlet-nightjar
Fiery minivet
Golden whistler
Golden-winged sunbird
Gray antbird
Gray nightjar
Gray potoo
Gray-breasted mountain-toucan
Gray-necked picathartes
Great blue turaco
Greater racket-tailed drongo
Greater thornbird
Guianan cock-of-the-rock
Hairy hermit
Helmeted hornbill
Highland tinamou
Hooded pitta
House sparrow
Kagu
King bird of paradise
King vulture
Kokako
Little slaty flycatcher
Long-tailed manakin
Luzon bleeding heart

Lyre-tailed honeyguide
Malaysian honeyguide
Maleo
Mauritius cuckoo-shrike
Osprey
Peregrine falcon
Purple sunbird
Purple-bearded bee-eater
Rainbow lorikeet
Red-billed scythebill
Ribbon-tailed astrapia
Roseate spoonbill
Rose-ringed parakeet
Ruby-cheeked sunbird
Rufous scrub-bird
Rufous vanga
Rufous-collared kingfisher
Rusty-belted tapaculo
Satin bowerbird
Sharpbill
Southern cassowary
Southern logrunner
Spangled cotinga
Spotted quail-thrush
Square-tailed drongo
Striated pardalote
Stripe-headed rhabdornis
Sulawesi red-knobbed hornbill
Sunbittern
Toco toucan
Toucan barbet
Variable pitohui
Victoria's riflebird
Wattled curassow
White-breasted mesite
Willie wagtail
Wire-tailed manakin

RIVER AND STREAM

African broadbill
African pitta
American anhinga
American cliff swallow
American dipper
American white pelican

Australian magpie-lark
 Baltimore oriole
 Barn swallow
 Baya weaver
 Black-and-red broadbill
 Black-capped donacobius
 Canada goose
 Cedar waxwing
 Chaffinch
 Common loon
 Crag martin
 Crested caracara
 Cuban tody
 Dusky woodswallow
 Eurasian dipper
 European bee-eater
 European roller
 Gray catbird
 Gray hypocolius
 Gray wagtail
 Gray woodpecker
 Great blue heron
 Great cormorant
 Great crested grebe
 Green woodhoopoe
 Gyrfalcon
 Hoatzin
 Mute swan
 Northern wryneck
 Peregrine falcon
 Red-breasted nuthatch
 Red-throated loon
 Roseate spoonbill
 Rosy-breasted longclaw
 Rufous-capped nunlet
 Rufous hornero
 Rufous-tailed jacamar
 Sacred ibis
 Shoebill
 Snow bunting
 Song sparrow
 Southern red bishop
 Spotted bowerbird
 Striped honeyeater
 Sunbittern
 Sungrebe

Village weaver
 Wood duck
 Yellow-breasted chat
 Yellow-fronted tinkerbird

SEASHORE

American cliff swallow
 American white pelican
 Arctic warbler
 Australian magpie-lark
 Barn swallow
 Beach thick-knee
 Belted kingfisher
 Black tern
 Black-faced sheathbill
 Blue-footed booby
 Brown pelican
 Cactus wren
 California condor
 Collared pratincole
 Common iora
 Common murre
 Crab plover
 Crag martin
 Cuban tody
 Fiery minivet
 Golden whistler
 Gray wagtail
 Great auk
 Great blue heron
 Great cormorant
 Greater flamingo
 Gyrfalcon
 Hood mockingbird
 Horned lark
 Magnificent frigatebird
 Northern gannet
 Osprey
 Peregrine falcon
 Puffin
 Roseate spoonbill
 Ruddy turnstone
 Sacred ibis
 Saunder's gull
 Snow bunting

Song sparrow
 Splendid fairy-wren
 Stonechat
 Variable oystercatcher
 Victoria's riflebird
 White-tailed tropicbird

TUNDRA

American robin
 Arctic skua
 Arctic warbler
 Canada goose
 Common loon
 Gyrfalcon
 Horned lark
 Northern raven
 Peregrine falcon
 Red-throated loon
 Ruddy turnstone
 Savanna sparrow
 Snow bunting
 Snowy owl
 Willow ptarmigan

WETLAND

African jacana
 African snipe
 American anhinga
 American avocet
 American cliff swallow
 American white pelican
 Australasian lark
 Australian magpie-lark
 Baltimore oriole
 Barn swallow
 Black rail
 Black tern
 Black-faced sheathbill
 Black-winged stilt
 Canada goose
 Cattle egret
 Common bulbul
 Common iora
 Crag martin
 Crested caracara

Eurasian bittern
European white stork
Gray wagtail
Gray-crowned crane
Great blue heron
Great cormorant
Greater flamingo
Greater painted snipe
Hairy hermit
Hammerhead
Harris's hawk
Horned screamer
House sparrow
Killdeer

King eider
Leaf-love
Limpkin
Long-billed curlew
Mallard
Mute swan
Northern lapwing
Osprey
Peregrine falcon
Pheasant-tailed jacana
Red-crowned crane
Red-winged blackbird
Roseate spoonbill
Rosy-breasted longclaw

Ruddy turnstone
Rufous-bellied seedsnipe
Sacred ibis
Sandhill crane
Saunders's gull
Shoebill
Sunbittern
Village weaver
Wood duck
Wood stork
Yellow-breasted chat
Zebra finch
Zitting cisticola

Species List by Geographic Range



AFGHANISTAN

Barn swallow
Chaffinch
Common myna
Crag martin
Egyptian vulture
Eurasian golden oriole
European bee-eater
European roller
European starling
Gray hypocolius
Great cormorant
Great crested grebe
Great tit
Greater hoopoe-lark
Hoopoe
House sparrow
Mute swan
Northern lapwing
Northern raven
Peregrine falcon
Rock pigeon
Snow finch
Spotted flycatcher
Spotted nutcracker
Winter wren

ALBANIA

Barn swallow
Chaffinch

Common cuckoo
Corncrake
Crag martin
Dunnock
Egyptian vulture
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow bunting
Spotted flycatcher
Stonechat
Winter wren

Zitting cisticola

ALGERIA

Barn swallow
Black-winged stilt
Chaffinch
Common bulbul
Common cuckoo
Common murre
Corncrake
Crag martin
Dunnock
Egyptian vulture
Eurasian bittern
Eurasian golden oriole
European bee-eater
European roller
European starling
Gray wagtail
Great cormorant
Great crested grebe
Greater hoopoe-lark
Hoopoe
House sparrow
Mallard
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Peregrine falcon

Rock pigeon
Ruddy turnstone
Small buttonquail
Spotted flycatcher
Stonechat
Winter wren
Zitting cisticola

ANDORRA

Great cormorant
Peregrine falcon

ANGOLA

African jacana
African palm swift
African paradise-flycatcher
African snipe
Bar-breasted mousebird
Barn swallow
Black tern
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Eurasian golden oriole
European bee-eater
European roller
European white stork
Gray go-away-bird
Great cormorant
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Lyre-tailed honeyguide
Namaqua sandgrouse
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker

Rock pigeon
Rosy-breasted longclaw
Ruddy turnstone
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Square-tailed drongo
Stonechat
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

ANTARCTICA

Black-faced sheathbill
Emperor penguin
Macaroni penguin
Wilson's storm-petrel

ARGENTINA

American anhinga
American cliff swallow
Arctic skua
Barn owl
Barn swallow
Barred antshrike
Baywing
Black rail
Black-capped donacobius
Black-winged stilt
Blue-black grassquit
Cattle egret
Common diving-petrel
Crested caracara
Emperor penguin
Gray potoo
Great kiskadee
Greater thornbird
Harris's hawk
House sparrow
King vulture
Lesser rhea

Limpkin
Macaroni penguin
Magellanic penguin
Manx shearwater
Peregrine falcon
Red-billed scythebill
Red-legged seriema
Rock pigeon
Roseate spoonbill
Ruddy turnstone
Rufous hornero
Rufous-bellied seedsnipe
Rufous-browed peppershrike
Rufous-tailed jacamar
Sharpbill
Sparkling violet-ear
Sungrebe
Toco toucan
Wilson's storm-petrel
Wood stork

ARMENIA

Barn swallow
Chaffinch
Common cuckoo
Dunnock
Egyptian vulture
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Northern lapwing
Northern raven
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow finch
Stonechat

Winter wren

ASCENSION

White-tailed tropicbird

AUSTRALIA

Albert's lyrebird
Arctic skua
Australasian figbird
Australasian lark
Australian magpie-lark
Australian pratincole
Beach thick-knee
Black-winged stilt
Cattle egret
Common diving-petrel
Crimson chat
Dollarbird
Dusky woodswallow
Eclectus parrot
Emu
European starling
Golden whistler
Gray butcherbird
Gray-crowned babbler
Great cormorant
Great crested grebe
Greater painted snipe
House sparrow
Jacky winter
Laughing kookaburra
Mallard
Malleefowl
Mute swan
Osprey
Painted buttonquail
Peregrine falcon
Rainbow lorikeet
Rock pigeon
Ruddy turnstone
Rufous scrub-bird
Rufous treecreeper
Satin bowerbird
Southern cassowary
Southern logrunner
Southern scrub robin

Splendid fairy-wren
Spotted bowerbird
Spotted quail-thrush
Striated grasswren
Striated pardalote
Striped honeyeater
Tawny frogmouth
Victoria's riflebird
Willie wagtail
Wilson's storm-petrel
Yellow-rumped thornbill
Zebra finch
Zitting cisticola

AUSTRIA

Barn swallow
Black tern
Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Crag martin
Dunnock
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow bunting
Snow finch
Spotted flycatcher

Spotted nutcracker
Stonechat
Winter wren

AZERBAIJAN

Barn swallow
Cattle egret
Chaffinch
Common cuckoo
Dunnock
Egyptian vulture
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Northern lapwing
Northern raven
Nuthatch
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Snow finch
Spotted flycatcher
Winter wren

BAHAMAS

American avocet
American mourning dove
American robin
Barn owl
Belted kingfisher
Black-and-white warbler
Black-winged stilt
Blue-gray gnatcatcher
Brown pelican
Cattle egret

Crested caracara
European starling
Gray catbird
House sparrow
Killdeer
Kirtland's warbler
Osprey
Peregrine falcon
Rock pigeon
Ruddy turnstone
White-tailed tropicbird
Wood stork
Yellow-bellied sapsucker

BANGLADESH

Barn swallow
Baya weaver
Black bulbul
Black-naped monarch
Black-winged stilt
Cattle egret
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crested tree swift
Dollarbird
Eurasian bittern
European white stork
Gray nightjar
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Greater painted snipe
Greater racket-tailed drongo
Green magpie
Hooded pitta
Hoopoe
House sparrow
Mallard
Northern wryneck
Osprey
Peregrine falcon
Pheasant-tailed jacana
Purple sunbird

Rock pigeon
Rose-ringed parakeet
Ruby-cheeked sunbird
Ruddy turnstone
Small buttonquail
Spotted munia
Stonechat
White-throated fantail
Zitting cisticola

BELARUS

Barn swallow
Black tern
Chaffinch
Common cuckoo
Corncrake
Dunnock
Eurasian bittern
Eurasian golden oriole
European roller
European starling
European white stork
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Spotted flycatcher
Spotted nutcracker
Winter wren

BELGIUM

Barn swallow
Black tern
Chaffinch
Common cuckoo
Common murre
Corncrake

Dunnock
Eurasian golden oriole
European roller
European starling
European white stork
Gray wagtail
Great auk
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Manx shearwater
Mute swan
Northern fulmar
Northern gannet
Northern lapwing
Northern wryneck
Nuthatch
Peregrine falcon
Puffin
Red-throated loon
Rock pigeon
Ruddy turnstone
Spotted flycatcher
Stonechat
Winter wren

BELIZE

American anhinga
American mourning dove
Baltimore oriole
Barn owl
Barred antshrike
Belted kingfisher
Black rail
Black-and-white warbler
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-gray gnatcatcher
Brown pelican
Cattle egret
Cedar waxwing
Crested caracara

Gray catbird
 Great blue heron
 Great kiskadee
 Harris's hawk
 House sparrow
 Killdeer
 King vulture
 Limpkin
 Magnificent frigatebird
 Northern raven
 Osprey
 Peregrine falcon
 Plain chachalaca
 Rock pigeon
 Rose-throated becard
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Savanna sparrow
 Scarlet macaw
 Sungrebe
 Whip-poor-will
 White-necked puffbird
 Wood stork
 Yellow-bellied sapsucker
 Yellow-breasted chat

BENIN

African jacana
 African palm swift
 African paradise-flycatcher
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Eurasian bittern
 European bee-eater
 European roller
 Gray parrot
 Gray woodpecker
 Great blue turaco
 Greater painted snipe
 Green woodhoopoe
 Hammerhead

Helmeted guineafowl
 Hoopoe
 Leaf-love
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird
 Zitting cisticola

BERMUDA

European starling
 Gray catbird
 House sparrow
 White-tailed tropicbird

BHUTAN

Asian fairy-bluebird
 Barn swallow
 Black-naped monarch
 Cattle egret
 Common cuckoo
 Coppersmith barbet
 Crested tree swift
 Dollarbird
 Eurasian bittern
 European white stork
 Fire-breasted flowerpecker
 Gray nightjar
 Great cormorant
 Great crested grebe
 Greater painted snipe
 Hooded pitta
 Hoopoe
 House sparrow
 Northern wryneck
 Osprey

Pheasant-tailed jacana
 Purple sunbird
 Rock pigeon
 Rose-ringed parakeet
 Satyr tragopan
 Small buttonquail
 Snow finch
 Spotted munia
 Spotted nutcracker
 Stonechat
 White-throated fantail
 Zitting cisticola

BOLIVIA

Amazonian umbrellabird
 American anhinga
 Barn owl
 Barn swallow
 Barred antshrike
 Baywing
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Cattle egret
 Chimney swift
 Crested caracara
 Gray antbird
 Gray potoo
 Great kiskadee
 Greater thornbird
 Hairy hermit
 Harris's hawk
 Horned screamer
 House sparrow
 Killdeer
 King vulture
 Lesser rhea
 Limpkin
 Oilbird
 Peregrine falcon
 Red-billed scythebill
 Red-legged seriema
 Roseate spoonbill
 Rufous hornero
 Rufous-bellied seedsnipe

Rufous-browed peppershrike
 Rufous-capped nunlet
 Rufous-tailed jacamar
 Scarlet macaw
 Sharpbill
 Spangled cotinga
 Sparkling violet-ear
 Sunbittern
 Sungrebe
 Toco toucan
 Wattled curassow
 White-necked puffbird
 Wood stork

BOSNIA AND HERZEGOVINA

Barn swallow
 Chaffinch
 Common cuckoo
 Corncrake
 Dunnock
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 European white stork
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Red crossbill
 Rock pigeon
 Snow bunting
 Snow finch
 Spotted flycatcher
 Stonechat
 Winter wren

Zitting cisticola

BOTSWANA

African jacana
 African palm swift
 African paradise-flycatcher
 African snipe
 Bar-breasted mousebird
 Barn swallow
 Black-winged stilt
 Cattle egret
 Common bulbul
 Common waxbill
 Corncrake
 Eurasian golden oriole
 European roller
 European white stork
 Gray go-away-bird
 Great cormorant
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 House sparrow
 Namaqua sandgrouse
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Rock pigeon
 Rosy-breasted longclaw
 Sacred ibis
 Secretary bird
 Small buttonquail
 Southern ground-hornbill
 Southern red bishop
 Spotted flycatcher
 Stonechat
 Village weaver
 White-helmet shrike
 Yellow-fronted tinkerbird
 Zitting cisticola

BRAZIL

Amazonian umbrellabird

American anhinga
 American cliff swallow
 Barn owl
 Barn swallow
 Barred antshrike
 Baywing
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Brown pelican
 Cattle egret
 Chimney swift
 Common trumpeter
 Coppery-chested jacamar
 Crested caracara
 Gray antbird
 Gray potoo
 Great kiskadee
 Greater thornbird
 Guianan cock-of-the-rock
 Hairy hermit
 Harris's hawk
 Hoatzin
 Horned screamer
 House sparrow
 King vulture
 Limpkin
 Magellanic penguin
 Magnificent frigatebird
 Manx shearwater
 Oilbird
 Osprey
 Peregrine falcon
 Red-billed scythebill
 Red-legged seriema
 Rock pigeon
 Roseate spoonbill
 Ruddy turnstone
 Rufous hornero
 Rufous-browed peppershrike
 Rufous-capped nunlet
 Rufous-tailed jacamar
 Rusty-belted tapaculo
 Scarlet macaw

Sharpbill
Spangled cotinga
Sparkling violet-ear
Sunbittern
Sungrebe
Toco toucan
Wattled curassow
White-necked puffbird
Wilson's storm-petrel
Wire-tailed manakin
Wood stork

BULGARIA

Barn swallow
Black-winged stilt
Chaffinch
Common cuckoo
Corncrake
Dunnock
Egyptian vulture
Eurasian bittern
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Snow bunting
Spotted flycatcher
Stonechat
Winter wren

Zitting cisticola

BURKINA FASO

African jacana
African palm swift
Barn swallow
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Egyptian vulture
Eurasian bittern
European bee-eater
European roller
European white stork
Gray woodpecker
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Northern wryneck
Osprey
Peregrine falcon
Rose-ringed parakeet
Sacred ibis
Secretary bird
Small buttonquail
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird

BURUNDI

African jacana
African palm swift
African paradise-flycatcher
African pitta
African snipe
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo

Common waxbill
Corncrake
Eurasian golden oriole
European bee-eater
European roller
European white stork
Gray parrot
Gray-crowned crane
Great blue turaco
Great cormorant
Great crested grebe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Sacred ibis
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Stonechat
Village weaver
Yellow-fronted tinkerbird
Zitting cisticola

CAMBODIA

Arctic warbler
Asian fairy-bluebird
Australasian lark
Barn swallow
Baya weaver
Black-naped monarch
Black-winged stilt
Cattle egret
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crested tree swift
Dollarbird
Fire-breasted flowerpecker
Gray nightjar

Gray wagtail
 Great cormorant
 Great tit
 Greater painted snipe
 Greater racket-tailed drongo
 Green magpie
 Hoopoe
 Northern wryneck
 Orange-breasted trogon
 Osprey
 Peregrine falcon
 Pheasant-tailed jacana
 Purple sunbird
 Rock pigeon
 Ruby-cheeked sunbird
 Ruddy turnstone
 Small buttonquail
 Spotted munia
 Stonechat
 White-throated fantail
 Zitting cisticola

CAMEROON

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Bar-breasted mousebird
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Eurasian bittern
 Eurasian golden oriole
 European roller
 European white stork
 Gray parrot
 Gray woodpecker
 Gray-necked picathartes
 Great blue turaco
 Great cormorant

Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Lyre-tailed honeyguide
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird
 Zitting cisticola

CANADA

American cliff swallow
 American dipper
 American goldfinch
 American mourning dove
 American robin
 American white pelican
 Anna's hummingbird
 Arctic skua
 Baltimore oriole
 Barn owl
 Barn swallow
 Belted kingfisher
 Black tern
 Black-and-white warbler
 Black-capped chickadee
 Blue jay
 Brown creeper
 Bushtit
 Canada goose
 Cattle egret
 Cedar waxwing
 Chimney swift

Common loon
 Common murre
 Eastern bluebird
 Eastern phoebe
 Eastern screech-owl
 European starling
 Gray catbird
 Great auk
 Great blue heron
 Great cormorant
 Gyrfalcon
 Horned lark
 House sparrow
 House wren
 Killdeer
 King eider
 Loggerhead shrike
 Long-billed curlew
 Mallard
 Manx shearwater
 Northern fulmar
 Northern gannet
 Northern raven
 Osprey
 Peregrine falcon
 Puffin
 Red crossbill
 Red-breasted nuthatch
 Red-throated loon
 Red-winged blackbird
 Rock pigeon
 Ruddy turnstone
 Sandhill crane
 Savanna sparrow
 Snow bunting
 Snowy owl
 Song sparrow
 Sprague's pipit
 Western grebe
 Whip-poor-will
 Willow ptarmigan
 Wilson's storm-petrel
 Winter wren
 Wood duck
 Yellow-bellied sapsucker
 Yellow-breasted chat

CENTRAL AFRICAN REPUBLIC

African broadbill
African jacana
African palm swift
African paradise-flycatcher
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Eurasian bittern
Eurasian golden oriole
European white stork
Gray parrot
Gray woodpecker
Great blue turaco
Great cormorant
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Leaf-love
Lyre-tailed honeyguide
Northern wryneck
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rose-ringed parakeet
Sacred ibis
Secretary bird
Shoebill
Small buttonquail
Spotted flycatcher
Square-tailed drongo
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird

CHAD

African jacana
African palm swift

African paradise-flycatcher
Barn swallow
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Egyptian vulture
Eurasian bittern
European white stork
Gray woodpecker
Great cormorant
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Northern wryneck
Osprey
Ostrich
Peregrine falcon
Rock pigeon
Rose-ringed parakeet
Sacred ibis
Secretary bird
Small buttonquail
Square-tailed drongo
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird

CHILE

Arctic skua
Barn owl
Barn swallow
Black rail
Black-winged stilt
Blue-black grassquit
Brown pelican
Cattle egret
Chimney swift
Common diving-petrel
Crested caracara
Emperor penguin
Harris's hawk
House sparrow
Killdeer

Lesser rhea
Macaroni penguin
Magellanic penguin
Osprey
Peregrine falcon
Rock pigeon
Ruddy turnstone
Rufous-bellied seedsnipe
Sparkling violet-ear
Wilson's storm-petrel

CHINA

Arctic warbler
Asian fairy-bluebird
Barn swallow
Baya weaver
Black bulbul
Black tern
Black-naped monarch
Black-winged stilt
Cattle egret
Chaffinch
Common cuckoo
Common iora
Common murre
Common myna
Coppersmith barbet
Crag martin
Crested tree swift
Dollarbird
Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European roller
European starling
Fire-breasted flowerpecker
Gray nightjar
Gray wagtail
Great bustard
Great cormorant
Great crested grebe
Great tit
Greater painted snipe
Greater racket-tailed drongo
Green magpie

Hooded pitta
 Hoopoe
 Horned lark
 House sparrow
 Japanese white-eye
 Mallard
 Mute swan
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Orange-breasted trogon
 Osprey
 Pallas's sandgrouse
 Peregrine falcon
 Pheasant-tailed jacana
 Purple sunbird
 Red crossbill
 Red-crowned crane
 Red-throated loon
 Rock pigeon
 Rose-ringed parakeet
 Ruby-cheeked sunbird
 Ruddy turnstone
 Satyr tragopan
 Saunder's gull
 Small buttonquail
 Snow bunting
 Snow finch
 Spotted flycatcher
 Spotted munia
 Spotted nutcracker
 Stonechat
 White-throated fantail
 Willow ptarmigan
 Winter wren
 Zitting cisticola

COLOMBIA

Amazonian umbrellabird
 American anhinga
 Baltimore oriole
 Barn owl
 Barn swallow
 Barred antshrike

Belted kingfisher
 Black tern
 Black-and-white warbler
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Blue-footed booby
 Brown pelican
 Cattle egret
 Common trumpeter
 Coppery-chested jacamar
 Crested caracara
 Gray antbird
 Gray potoo
 Gray-breasted mountain-toucan
 Great blue heron
 Great kiskadee
 Greater flamingo
 Guianan cock-of-the-rock
 Hairy hermit
 Harris's hawk
 Highland tinamou
 Hoatzin
 Horned lark
 Horned screamer
 House sparrow
 Killdeer
 King vulture
 Limpkin
 Magnificent frigatebird
 Oilbird
 Osprey
 Peregrine falcon
 Red-billed scythebill
 Roseate spoonbill
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Rusty-belted tapaculo
 Scarlet macaw
 Spangled cotinga
 Sparkling violet-ear
 Sunbittern
 Sungrebe

Toucan barbet
 Wattled curassow
 White-necked puffbird
 Wilson's storm-petrel
 Wire-tailed manakin
 Wood stork

COMOROS

White-tailed tropicbird

CONGO

African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Bar-breasted mousebird
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Eurasian golden oriole
 Gray parrot
 Great blue turaco
 Great cormorant
 Greater painted snipe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Lyre-tailed honeyguide
 Osprey
 Peregrine falcon
 Ruddy turnstone
 Sacred ibis
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 Zitting cisticola

COSTA RICA

American anhinga
American dipper
American mourning dove
Baltimore oriole
Barn owl
Barn swallow
Barred antshrike
Belted kingfisher
Black guan
Black rail
Black tern
Black-and-white warbler
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Brown pelican
Cattle egret
Cedar waxwing
Crested caracara
Gray catbird
Gray potoo
Great blue heron
Great kiskadee
Harris's hawk
Highland tinamou
House sparrow
Killdeer
King vulture
Limpkin
Long-tailed manakin
Magnificent frigatebird
Oilbird
Osprey
Peregrine falcon
Plain chachalaca
Resplendent quetzal
Rock pigeon
Roseate spoonbill
Rose-throated becard
Ruddy turnstone
Rufous-browed peppershrike
Rufous-tailed jacamar
Scarlet macaw
Sharpbill

Sunbittern
Sungebe
White-necked puffbird
Wood stork
Yellow-bellied sapsucker
Yellow-breasted chat

CROATIA

Barn swallow
Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Dunnoek
Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Snow bunting
Snow finch
Spotted flycatcher
Stonechat
Winter wren
Zitting cisticola

CUBA

American avocet
American mourning dove

Barn owl
Belted kingfisher
Black rail
Black-and-white warbler
Black-winged stilt
Blue-gray gnatcatcher
Brown pelican
Crested caracara
Cuban tody
Gray catbird
Greater flamingo
House sparrow
Ivory-billed woodpecker
Killdeer
Limpkin
Magnificent frigatebird
Northern bobwhite quail
Osprey
Peregrine falcon
Rock pigeon
Roseate spoonbill
Ruddy turnstone
Whip-poor-will
White-tailed tropicbird
Wood duck
Wood stork
Yellow-bellied sapsucker

CYPRUS

European roller
Great cormorant
Northern gannet
Peregrine falcon
Zitting cisticola

CZECH REPUBLIC

Barn swallow
Black tern
Chaffinch
Common cuckoo
Corncrake
Dunnoek
Eurasian dipper
Eurasian golden oriole
European roller
European starling

European white stork
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Mute swan
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Red crossbill
 Rock pigeon
 Snow bunting
 Spotted flycatcher
 Spotted nutcracker
 Stonechat
 Winter wren

DEMOCRATIC REPUBLIC OF THE CONGO

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 African snipe
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Corncrake
 Egyptian vulture
 Eurasian bittern
 Eurasian golden oriole
 European bee-eater
 European roller

European white stork
 Golden-winged sunbird
 Gray go-away-bird
 Gray parrot
 Gray woodpecker
 Gray-crowned crane
 Great blue turaco
 Great cormorant
 Great crested grebe
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 House sparrow
 Leaf-love
 Lyre-tailed honeyguide
 Northern wryneck
 Osprey
 Peregrine falcon
 Red-billed oxpecker
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Shoebill
 Small buttonquail
 Southern ground-hornbill
 Southern red bishop
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 White-helmet shrike
 Yellow-fronted tinkerbird
 Zitting cisticola

DENMARK

Barn swallow
 Canada goose
 Chaffinch
 Common cuckoo
 Common murre
 Corncrake
 Dunnock
 Eurasian bittern
 European roller

European starling
 Great auk
 Great cormorant
 Great crested grebe
 Great tit
 House sparrow
 Mallard
 Manx shearwater
 Mute swan
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Puffin
 Red crossbill
 Red-throated loon
 Rock pigeon
 Snow bunting
 Spotted flycatcher
 Stonechat
 Winter wren

DJIBOUTI

African paradise-flycatcher
 African snipe
 Bar-breasted mousebird
 Cattle egret
 Collared pratincole
 Common bulbul
 Corncrake
 Crab plovers
 Egyptian vulture
 European roller
 Great cormorant
 Greater flamingo
 Greater hoopoe-lark
 Green woodhoopoe
 Hammerhead
 Hoopoe
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Ruddy turnstone

Sacred ibis
Secretary bird
Small buttonquail
Stonechat
Wilson's storm-petrel

DOMINICAN REPUBLIC

American mourning dove
Barn owl
Belted kingfisher
Black rail
Black-and-white warbler
Black-winged stilt
Brown pelican
Cattle egret
Crested caracara
Greater flamingo
House sparrow
Killdeer
Limpkin
Magnificent frigatebird
Osprey
Palmchat
Peregrine falcon
Rock pigeon
Roseate spoonbill
Ruddy turnstone
White-tailed tropicbird
Wilson's storm-petrel
Wood stork
Yellow-bellied sapsucker

ECUADOR

Amazonian umbrellabird
American anhinga
Barn owl
Barn swallow
Barred antshrike
Black tern
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Brown pelican
Cattle egret
Chimney swift

Common trumpeter
Coppery-chested jacamar
Crested caracara
Gray antbird
Gray potoo
Gray-breasted mountain-toucan
Great kiskadee
Greater flamingo
Harris's hawk
Highland tinamou
Hood mockingbird
Horned screamer
House sparrow
Killdeer
King vulture
Limpkin
Magnificent frigatebird
Oilbird
Osprey
Peregrine falcon
Red-billed scythebill
Roseate spoonbill
Ruddy turnstone
Rufous-bellied seedsnipe
Rufous-browed peppershrike
Rufous-tailed jacamar
Rusty-belted tapaculo
Scarlet macaw
Sharpbill
Spangled cotinga
Sparkling violet-ear
Sunbittern
Sungrebe
Toucan barbet
White-necked puffbird
Wilson's storm-petrel
Wire-tailed manakin

EGYPT

Barn swallow
Black tern
Black-winged stilt
Cattle egret
Common bulbul
Corncrake

Egyptian vulture
Eurasian bittern
European roller
Gray wagtail
Great cormorant
Great crested grebe
Greater flamingo
Greater hoopoe-lark
Greater painted snipe
Hoopoe
House sparrow
Mallard
Northern gannet
Northern lapwing
Northern raven
Osprey
Peregrine falcon
Rock pigeon
Ruddy turnstone
Stonechat
Zitting cisticola

EL SALVADOR

American anhinga
American mourning dove
Baltimore oriole
Barn owl
Barred antshrike
Belted kingfisher
Black rail
Black tern
Black-and-white warbler
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Blue-gray gnatcatcher
Brown creeper
Brown pelican
Cattle egret
Cedar waxwing
Crested caracara
Great blue heron
Great kiskadee
Harris's hawk
House sparrow

Killdeer
 King vulture
 Limpkin
 Long-tailed manakin
 Magnificent frigatebird
 Northern raven
 Osprey
 Peregrine falcon
 Rock pigeon
 Roseate spoonbill
 Rose-throated becard
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Sunbittern
 Sungrebe
 Whip-poor-will
 White-necked puffbird
 Wood stork
 Yellow-bellied sapsucker
 Yellow-breasted chat

EQUATORIAL GUINEA

African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Gray parrot
 Gray-necked picathartes
 Great blue turaco
 Great cormorant
 Great crested grebe
 Hammerhead
 Helmeted guineafowl
 Leaf-love
 Lyre-tailed honeyguide
 Osprey
 Peregrine falcon
 Ruddy turnstone

Sacred ibis
 Spotted flycatcher
 Village weaver
 Wilson's storm-petrel
 Zitting cisticola

ERITREA

African paradise-flycatcher
 African snipe
 Bar-breasted mousebird
 Cattle egret
 Collared pratincole
 Common bulbul
 Corncrake
 Crab plovers
 Egyptian vulture
 Eurasian bittern
 European roller
 European white stork
 Gray woodpecker
 Greater flamingo
 Greater hoopoe-lark
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Rock pigeon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Stonechat
 White-helmet shrike
 Wilson's storm-petrel
 Zitting cisticola

ESTONIA

Barn swallow
 Black tern
 Chaffinch

Common cuckoo
 Common murre
 Corncrake
 Dunnock
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European roller
 European starling
 European white stork
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Red crossbill
 Rock pigeon
 Spotted flycatcher
 Willow ptarmigan
 Winter wren

ETHIOPIA

African jacana
 African palm swift
 African paradise-flycatcher
 African snipe
 Bar-breasted mousebird
 Barn swallow
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Corncrake
 Egyptian vulture
 Eurasian bittern
 European roller

European white stork
 Gray wagtail
 Gray woodpecker
 Great cormorant
 Great crested grebe
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Northern wryneck
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Rose-ringed parakeet
 Sacred ibis
 Secretary bird
 Small buttonquail
 Stonechat
 Village weaver
 White-helmet shrike
 Yellow-fronted tinkerbird
 Zitting cisticola

FALKLAND ISLANDS

Arctic skua
 Crested caracara
 Emperor penguin
 House sparrow
 Macaroni penguin
 Magellanic penguin
 Peregrine falcon

FIJI

European starling
 Golden whistler
 White-tailed tropicbird

FINLAND

Arctic warbler
 Barn swallow
 Chaffinch
 Common cuckoo
 Common murre

Corncrake
 Dunnock
 Eurasian bittern
 Eurasian dipper
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Gyrfalcon
 Horned lark
 House sparrow
 Mute swan
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Osprey
 Peregrine falcon
 Puffin
 Red crossbill
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Spotted flycatcher
 Spotted nutcracker
 Willow ptarmigan
 Winter wren

FRANCE

Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Chaffinch
 Common cuckoo
 Common loon
 Common murre
 Corncrake
 Dunnock
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater

European roller
 European starling
 European white stork
 Gray wagtail
 Great auk
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Hoopoe
 House sparrow
 Mallard
 Manx shearwater
 Mute swan
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Peregrine falcon
 Puffin
 Red crossbill
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Snow finch
 Spotted flycatcher
 Stonechat
 Wilson's storm-petrel
 Winter wren
 Zitting cisticola

FRENCH GUIANA

American anhinga
 Barn owl
 Barn swallow
 Barred antshrike
 Black tern
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Brown pelican
 Cattle egret

Common trumpeter
 Crested caracara
 Gray antbird
 Gray potoo
 Great kiskadee
 Guianan cock-of-the-rock
 Hairy hermit
 Hoatzin
 King vulture
 Limpkin
 Magnificent frigatebird
 Osprey
 Peregrine falcon
 Roseate spoonbill
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Scarlet macaw
 Spangled cotinga
 Sunbittern
 Sungrebe
 White-necked puffbird
 Wilson's storm-petrel
 Wood stork

GABON

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Bar-breasted mousebird
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Eurasian golden oriole
 Gray parrot
 Gray-necked picathartes
 Great blue turaco
 Great cormorant

Greater painted snipe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Lyre-tailed honeyguide
 Osprey
 Peregrine falcon
 Ruddy turnstone
 Sacred ibis
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 Wilson's storm-petrel
 Zitting cisticola

GAMBIA

African palm swift
 African paradise-flycatcher
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Egyptian vulture
 Eurasian bittern
 Gray woodpecker
 Greater flamingo
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Magnificent frigatebird
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Village weaver
 White-helmet shrike

Wilson's storm-petrel
 Yellow-fronted tinkerbird

GEORGIA

Barn swallow
 Chaffinch
 Common cuckoo
 Corncrake
 Dunnock
 Egyptian vulture
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 Horned lark
 House sparrow
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Red crossbill
 Rock pigeon
 Snow finch
 Spotted flycatcher
 Stonechat
 Winter wren

GERMANY

Barn swallow
 Black tern
 Canada goose
 Chaffinch
 Common cuckoo
 Common murre
 Corncrake
 Dunnock
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole

European roller
 European starling
 European white stork
 Gray wagtail
 Great auk
 Great bustard
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Manx shearwater
 Mute swan
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Puffin
 Red crossbill
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Snow bunting
 Snow finch
 Spotted flycatcher
 Spotted nutcracker
 Stonechat
 Winter wren

GHANA

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Eurasian bittern

European bee-eater
 European roller
 Gray parrot
 Gray woodpecker
 Great blue turaco
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird
 Zitting cisticola

GREECE

Barn swallow
 Chaffinch
 Common cuckoo
 Corncrake
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe

Horned lark
 House sparrow
 Mallard
 Mute swan
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Peregrine falcon
 Red crossbill
 Rock pigeon
 Spotted flycatcher
 Stonechat
 Winter wren
 Zitting cisticola

GREENLAND

Arctic skua
 Common loon
 Common murre
 Great auk
 Great cormorant
 Gyrfalcon
 King eider
 Mallard
 Manx shearwater
 Northern fulmar
 Northern gannet
 Northern raven
 Peregrine falcon
 Puffin
 Red-throated loon
 Ruddy turnstone
 Snow bunting
 Snowy owl

GUATEMALA

American anhinga
 American dipper
 American mourning dove
 American robin
 Baltimore oriole
 Barn owl
 Barred antshrike
 Belted kingfisher
 Black rail

Black tern
 Black-and-white warbler
 Black-capped vireo
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Blue-footed booby
 Blue-gray gnatcatcher
 Brown creeper
 Brown pelican
 Cattle egret
 Cedar waxwing
 Crested caracara
 Gray catbird
 Great blue heron
 Great kiskadee
 Harris's hawk
 House sparrow
 Killdeer
 King vulture
 Limpkin
 Long-tailed manakin
 Magnificent frigatebird
 Northern raven
 Osprey
 Peregrine falcon
 Plain chachalaca
 Resplendent quetzal
 Rock pigeon
 Roseate spoonbill
 Rose-throated becard
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Savanna sparrow
 Scarlet macaw
 Sunbittern
 Sungrebe
 Whip-poor-will
 White-necked puffbird
 Wood stork
 Yellow-bellied sapsucker
 Yellow-breasted chat

GUINEA

African palm swift

African paradise-flycatcher
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Eurasian bittern
 European bee-eater
 European roller
 Gray parrot
 Gray woodpecker
 Great blue turaco
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Northern wryneck
 Osprey
 Peregrine falcon
 Rock pigeon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Small buttonquail
 Square-tailed drongo
 Stonechat
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird

GUINEA-BISSAU

African palm swift
 African paradise-flycatcher
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Egyptian vulture

Eurasian bittern
 Gray parrot
 Gray woodpecker
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Magnificent frigatebird
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Small buttonquail
 Square-tailed drongo
 Village weaver
 Wilson's storm-petrel

GUYANA

American anhinga
 Barn owl
 Barn swallow
 Barred antshrike
 Belted kingfisher
 Black tern
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Brown pelican
 Cattle egret
 Common trumpeter
 Crested caracara
 Gray antbird
 Gray potoo
 Great kiskadee
 Greater flamingo
 Guianan cock-of-the-rock
 Hairy hermit
 Hoatzin
 King vulture
 Limpkin
 Magnificent frigatebird
 Oilbird

Osprey
Peregrine falcon
Roseate spoonbill
Ruddy turnstone
Rufous-browed peppershrike
Rufous-tailed jacamar
Scarlet macaw
Sharpbill
Spangled cotinga
Sparkling violet-ear
Sunbittern
Sungrebe
White-necked puffbird
Wilson's storm-petrel
Wood stork

HAITI

American mourning dove
Barn owl
Belted kingfisher
Black-and-white warbler
Black-winged stilt
Brown pelican
Cattle egret
Crested caracara
Greater flamingo
House sparrow
Killdeer
Limpkin
Magnificent frigatebird
Osprey
Palmchat
Peregrine falcon
Rock pigeon
Roseate spoonbill
Ruddy turnstone
White-tailed tropicbird
Wood stork
Yellow-bellied sapsucker

HONDURAS

American anhinga
American mourning dove
Baltimore oriole
Barn owl
Barred antshrike

Belted kingfisher
Black tern
Black-and-white warbler
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Blue-gray gnatcatcher
Brown creeper
Brown pelican
Cattle egret
Cedar waxwing
Crested caracara
Gray catbird
Great blue heron
Great kiskadee
Harris's hawk
House sparrow
Killdeer
King vulture
Limpkin
Long-tailed manakin
Magnificent frigatebird
Northern raven
Osprey
Peregrine falcon
Plain chachalaca
Resplendent quetzal
Rock pigeon
Roseate spoonbill
Rose-throated becard
Ruddy turnstone
Rufous-browed peppershrike
Rufous-tailed jacamar
Scarlet macaw
Sunbittern
Sungrebe
Whip-poor-will
White-necked puffbird
Wood stork
Yellow-bellied sapsucker
Yellow-breasted chat

HUNGARY

Barn swallow
Black tern

Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Dunnock
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great bustard
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow bunting
Spotted flycatcher
Stonechat
Winter wren

ICELAND

Arctic skua
Common loon
Common murre
European starling
Great auk
Great cormorant
Gyr Falcon
King eider
Mallard
Manx shearwater
Northern fulmar
Northern gannet
Northern raven
Puffin
Red-throated loon

Snow bunting

INDIA

Asian fairy-bluebird
Barn swallow
Baya weaver
Black bulbul
Black-naped monarch
Black-winged stilt
Cattle egret
Chaffinch
Collared pratincole
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crab plovers
Crag martin
Crested tree swift
Dollarbird
Egyptian vulture
Eurasian bittern
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Fire-breasted flowerpecker
Gray hypocolius
Gray nightjar
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Greater flamingo
Greater painted snipe
Greater racket-tailed drongo
Green magpie
Hooded pitta
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Osprey

Peregrine falcon
Pheasant-tailed jacana
Purple sunbird
Rock pigeon
Rose-ringed parakeet
Ruby-cheeked sunbird
Ruddy turnstone
Satyr tragopan
Small buttonquail
Spotted munia
Spotted nutcracker
Stonechat
White-throated fantail
Wilson's storm-petrel
Zitting cisticola

INDONESIA

Arctic warbler
Asian fairy-bluebird
Australasian figbird
Australasian lark
Australian magpie-lark
Australian pratincole
Barn swallow
Barred eagle-owl
Baya weaver
Beach thick-knee
Black-and-red broadbill
Black-naped monarch
Black-winged stilt
Bornean bristlehead
Cattle egret
Common iora
Coppersmith barbet
Dollarbird
Eclectus parrot
Fan-tailed berrypecker
Feline owl-nightjar
Fiery minivet
Fire-breasted flowerpecker
Golden whistler
Gray nightjar
Gray wagtail
Gray-crowned babbler
Great cormorant
Great tit

Greater painted snipe
Greater racket-tailed drongo
Green magpie
Helmeted hornbill
Hooded pitta
King bird of paradise
Malaysian honeyguide
Maleo
Orange-breasted trogon
Osprey
Peregrine falcon
Pheasant-tailed jacana
Purple-bearded bee-eater
Rainbow lorikeet
Rock pigeon
Ruby-cheeked sunbird
Ruddy turnstone
Rufous-collared kingfisher
Small buttonquail
Southern cassowary
Spotted munia
Sulawesi red-knobbed hornbill
Variable pitohui
White-throated fantail
Willie wagtail
Wilson's storm-petrel
Zebra finch
Zitting cisticola

IRAN

Barn swallow
Black-winged stilt
Cattle egret
Chaffinch
Common cuckoo
Common myna
Corncrake
Crab plovers
Crag martin
Dunnoek
Egyptian vulture
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller

European starling
 European white stork
 Gray hypocolius
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Greater hoopoe-lark
 Hoopoe
 Horned lark
 House sparrow
 Mallard
 Mute swan
 Northern lapwing
 Northern raven
 Nuthatch
 Osprey
 Peregrine falcon
 Purple sunbird
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Snow finch
 Spotted flycatcher
 Stonechat
 Wilson's storm-petrel
 Winter wren

IRAQ

Black-winged stilt
 Cattle egret
 Chaffinch
 Collared pratincole
 Corncrake
 Dunnock
 Egyptian vulture
 Eurasian bittern
 European bee-eater
 European roller
 European starling
 Gray hypocolius
 Gray wagtail
 Great cormorant
 Great crested grebe

Greater hoopoe-lark
 Hoopoe
 House sparrow
 Mallard
 Northern lapwing
 Nuthatch
 Osprey
 Peregrine falcon
 Rock pigeon
 Spotted flycatcher
 Stonechat

IRELAND

Barn owl
 Barn swallow
 Canada goose
 Chaffinch
 Common cuckoo
 Common loon
 Common murre
 Corncrake
 Dunnock
 Eurasian dipper
 European starling
 Gray wagtail
 Great auk
 Great cormorant
 Great crested grebe
 Great tit
 House sparrow
 Mallard
 Manx shearwater
 Mute swan
 Northern gannet
 Northern lapwing
 Northern raven
 Peregrine falcon
 Puffin
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Spotted flycatcher
 Stonechat
 Willow ptarmigan
 Winter wren

ISRAEL

Black-winged stilt
 Cattle egret
 Collared pratincole
 Common cuckoo
 Egyptian vulture
 European bee-eater
 European roller
 Great cormorant
 Greater flamingo
 Hoopoe
 Horned lark
 House sparrow
 Mallard
 Northern gannet
 Northern lapwing
 Peregrine falcon
 Rock pigeon
 Stonechat
 Winter wren
 Zitting cisticola

ITALY

Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Chaffinch
 Common cuckoo
 Corncrake
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Hoopoe
 House sparrow
 Mallard

Mute swan
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow finch
Spotted flycatcher
Stonechat
Winter wren
Zitting cisticola

IVORY COAST

African broadbill
African jacana
African palm swift
African paradise-flycatcher
African pitta
Barn swallow
Black tern
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Eurasian bittern
European bee-eater
European roller
Gray parrot
Gray woodpecker
Great blue turaco
Green woodhoopoe
Hammerhead
Hoopoe
Leaf-love
Lyre-tailed honeyguide
Northern wryneck
Osprey
Peregrine falcon
Rose-ringed parakeet
Ruddy turnstone
Sacred ibis
Small buttonquail

Spotted flycatcher
Square-tailed drongo
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

JAMAICA

American mourning dove
Barn owl
Belted kingfisher
Black rail
Black-and-white warbler
Brown pelican
Cattle egret
Crested caracara
European starling
Gray catbird
House sparrow
Killdeer
Magnificent frigatebird
Osprey
Peregrine falcon
Rock pigeon
Ruddy turnstone
White-tailed tropicbird
Wood stork

JAPAN

Arctic warbler
Barn swallow
Cattle egret
Common murre
Dollarbird
Eurasian bittern
Gray nightjar
Gray wagtail
Great cormorant
Great tit
Greater painted snipe
Hoopoe
Japanese white-eye
Laysan albatross
Mallard
Mute swan

Northern fulmar
Northern lapwing
Northern raven
Nuthatch
Osprey
Peregrine falcon
Red crossbill
Red-crowned crane
Red-throated loon
Rock pigeon
Saunders's gull
Spotted nutcracker
Stonechat
Willow ptarmigan
Winter wren

JORDAN

Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Egyptian vulture
European bee-eater
European roller
Gray wagtail
Great cormorant
Hoopoe
House sparrow
Northern gannet
Northern lapwing
Peregrine falcon
Rock pigeon
Stonechat
Winter wren

KAZAKHSTAN

Barn swallow
Black tern
Black-winged stilt
Chaffinch
Collared pratincole
Common cuckoo
Common myna
Corncrake
Egyptian vulture
Eurasian bittern

Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 European white stork
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Hoopoe
 Horned lark
 House sparrow
 Mallard
 Mute swan
 Northern raven
 Pallas's sandgrouse
 Peregrine falcon
 Red crossbill
 Red-throated loon
 Rock pigeon
 Snow bunting
 Spotted flycatcher
 Spotted nutcracker
 Stonechat
 Willow ptarmigan
 Winter wren

KENYA

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African snipe
 Bar-breasted mousebird
 Barn swallow
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Corncrake
 Crab plovers
 Egyptian vulture
 Eurasian golden oriole

European bee-eater
 European roller
 European white stork
 Golden-winged sunbird
 Gray parrot
 Gray wagtail
 Gray woodpecker
 Gray-crowned crane
 Great blue turaco
 Great cormorant
 Great crested grebe
 Greater flamingo
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Northern wryneck
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Rock pigeon
 Rosy-breasted longclaw
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Shoebill
 Small buttonquail
 Southern ground-hornbill
 Southern red bishop
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Zitting cisticola

KUWAIT

Black-winged stilt
 Cattle egret
 Chaffinch
 Collared pratincole
 Crab plovers
 Eurasian bittern

European roller
 Gray wagtail
 Great cormorant
 Great crested grebe
 Greater hoopoe-lark
 House sparrow
 Mallard
 Northern lapwing
 Nuthatch
 Osprey
 Peregrine falcon
 Rock pigeon
 Ruddy turnstone
 Spotted flycatcher
 Wilson's storm-petrel
 Zitting cisticola

KYRGYZSTAN

Barn swallow
 Chaffinch
 Common cuckoo
 Crag martin
 Egyptian vulture
 Eurasian bittern
 Eurasian golden oriole
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Northern raven
 Pallas's sandgrouse
 Peregrine falcon
 Rock pigeon
 Snow finch
 Spotted flycatcher
 Stonechat
 Winter wren

LAOS

Asian fairy-bluebird
 Australasian lark

Barn swallow
Baya weaver
Black bulbul
Black-and-red broadbill
Black-crowned barwing
Black-naped monarch
Black-winged stilt
Cattle egret
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crested tree swift
Dollarbird
Eurasian bittern
Fire-breasted flowerpecker
Gray nightjar
Gray wagtail
Great cormorant
Greater painted snipe
Greater racket-tailed drongo
Green magpie
Hoopoe
Northern wryneck
Orange-breasted trogon
Peregrine falcon
Pheasant-tailed jacana
Purple sunbird
Rock pigeon
Ruby-cheeked sunbird
Small buttonquail
Spotted munia
Stonechat
White-throated fantail
Zitting cisticola

LATVIA

Barn swallow
Black tern
Chaffinch
Common cuckoo
Common murre
Corncrake
Dunnoek
Eurasian bittern
Eurasian dipper

Eurasian golden oriole
European roller
European starling
European white stork
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern fulmar
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Red crossbill
Rock pigeon
Spotted flycatcher
Spotted nutcracker
Willow ptarmigan
Winter wren

LEBANON

Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Dunnoek
Egyptian vulture
European bee-eater
European roller
Great cormorant
Greater flamingo
Hoopoe
Horned lark
House sparrow
Mallard
Northern gannet
Northern lapwing
Nuthatch
Peregrine falcon
Rock pigeon
Spotted flycatcher
Stonechat

Winter wren

LESOTHO

African jacana
African snipe
Barn swallow
Black-winged stilt
Blue bustard
Cattle egret
Common cuckoo
Common waxbill
Corncrake
European roller
European white stork
Great cormorant
Great crested grebe
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Osprey
Peregrine falcon
Sacred ibis
Secretary bird
Small buttonquail
Southern red bishop
Spotted flycatcher
Stonechat
Village weaver
Zitting cisticola

LESSER ANTILLES

Barn owl
Belted kingfisher
Brown pelican
Cattle egret
Crested caracara
Greater flamingo
House sparrow
Killdeer
Magnificent frigatebird
Osprey
Peregrine falcon
Rock pigeon

Ruddy turnstone
White-tailed tropicbird
Wood stork

LIBERIA

African broadbill
African palm swift
African paradise-flycatcher
African pitta
Barn swallow
Black tern
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Eurasian bittern
Gray parrot
Gray woodpecker
Great blue turaco
Hammerhead
Leaf-love
Lyre-tailed honeyguide
Northern wryneck
Osprey
Peregrine falcon
Ruddy turnstone
Sacred ibis
Small buttonquail
Spotted flycatcher
Village weaver
Wilson's storm-petrel

LIBYA

Barn swallow
Black-winged stilt
Common bulbul
Crag martin
Egyptian vulture
Eurasian bittern
Gray wagtail
Greater hoopoe-lark
House sparrow
Mallard
Northern gannet

Northern lapwing
Northern raven
Peregrine falcon
Rock pigeon
Ruddy turnstone
Stonechat
Winter wren

LIECHTENSTEIN

Barn swallow
Black tern
Chaffinch
Common cuckoo
Corncrake
Dunnoch
Eurasian golden oriole
European roller
European starling
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow finch
Spotted flycatcher
Stonechat
Winter wren

LITHUANIA

Barn swallow
Black tern
Chaffinch
Common cuckoo
Common murre
Corncrake
Dunnoch

Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European roller
European starling
European white stork
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern fulmar
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Red crossbill
Rock pigeon
Spotted flycatcher
Spotted nutcracker
Winter wren

LUXEMBOURG

Barn swallow
Black tern
Chaffinch
Common cuckoo
Corncrake
Dunnoch
Eurasian golden oriole
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck

Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Spotted flycatcher
Stonechat
Winter wren

MACEDONIA

Barn swallow
Chaffinch
Common cuckoo
Corncrake
Crag martin
Duncock
Egyptian vulture
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow bunting
Spotted flycatcher
Stonechat
Winter wren

MADAGASCAR

African palm swift
Black-winged stilt
Cattle egret

Common sunbird-asity
Crab plovers
Greater flamingo
Greater painted snipe
Hammerhead
Hoopoe
Peregrine falcon
Ruddy turnstone
Rufous vanga
Sacred ibis
Stonechat
White-breasted mesite
Wilson's storm-petrel

MALAWI

African broadbill
African jacana
African palm swift
African paradise-flycatcher
African pitta
African snipe
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cape batis
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
Eurasian golden oriole
European bee-eater
European roller
European white stork
Gray go-away-bird
Gray-crowned crane
Great cormorant
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Osprey

Peregrine falcon
Red-billed oxpecker
Rock pigeon
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Square-tailed drongo
Stonechat
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird
Zitting cisticola

MALAYSIA

Arctic warbler
Asian fairy-bluebird
Barn swallow
Barred eagle-owl
Baya weaver
Black-and-red broadbill
Black-naped monarch
Black-winged stilt
Common iora
Common myna
Coppersmith barbet
Dollarbird
Fiery minivet
Fire-breasted flowerpecker
Gray nightjar
Gray wagtail
Great cormorant
Greater painted snipe
Greater racket-tailed drongo
Green magpie
Helmeted hornbill
Hooded pitta
Malaysian honeyguide
Orange-breasted trogon
Osprey
Peregrine falcon
Pheasant-tailed jacana
Rock pigeon
Ruby-cheeked sunbird

Ruddy turnstone
Rufous-collared kingfisher
Spotted munia
White-throated fantail
Zitting cisticola

MALI

African jacana
African palm swift
African paradise-flycatcher
Barn swallow
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Egyptian vulture
Eurasian bittern
European bee-eater
European roller
European white stork
Gray wagtail
Gray woodpecker
Greater hoopoe-lark
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Leaf-love
Northern wryneck
Osprey
Ostrich
Peregrine falcon
Rock pigeon
Rose-ringed parakeet
Sacred ibis
Secretary bird
Small buttonquail
Stonechat
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird
Zitting cisticola

MAURITANIA

Barn swallow

Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Crag martin
Egyptian vulture
Eurasian bittern
European roller
European white stork
Gray woodpecker
Greater flamingo
Greater hoopoe-lark
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Magnificent frigatebird
Manx shearwater
Northern gannet
Osprey
Ostrich
Peregrine falcon
Rock pigeon
Rose-ringed parakeet
Ruddy turnstone
Secretary bird
Small buttonquail
Wilson's storm-petrel
Zitting cisticola

MAURITIUS

Dodo
Mauritius cuckoo-shrike

MEXICO

American anhinga
American avocet
American cliff swallow
American dipper
American goldfinch
American mourning dove
American robin
American white pelican
Anna's hummingbird
Baltimore oriole

Barn owl
Barn swallow
Barred antshrike
Belted kingfisher
Black rail
Black tern
Black-and-white warbler
Black-capped vireo
Black-winged stilt
Blue jay
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Blue-gray gnatcatcher
Brown creeper
Brown pelican
Bushtit
Cactus wren
Canada goose
Cattle egret
Cedar waxwing
Common loon
Crested caracara
Eastern bluebird
Eastern phoebe
Eastern screech-owl
European starling
Gray catbird
Great blue heron
Great kiskadee
Greater roadrunner
Harris's hawk
Horned lark
House sparrow
House wren
Killdeer
King vulture
Limpkin
Loggerhead shrike
Long-billed curlew
Long-tailed manakin
Magnificent frigatebird
Mallard
Northern bobwhite quail
Northern gannet
Northern raven

Osprey
 Peregrine falcon
 Plain chachalaca
 Red-throated loon
 Red-winged blackbird
 Resplendent quetzal
 Rock pigeon
 Roseate spoonbill
 Rose-throated becard
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Sandhill crane
 Savanna sparrow
 Scarlet macaw
 Song sparrow
 Sprague's pipit
 Sungrebe
 Verdin
 Western grebe
 Western scrub-jay
 Whip-poor-will
 White-necked puffbird
 Wild turkey
 Wilson's storm-petrel
 Winter wren
 Wood duck
 Wood stork
 Wrentit
 Yellow-bellied sapsucker
 Yellow-breasted chat

MOLDOVA

Barn swallow
 Black tern
 Chaffinch
 Collared pratincole
 Common cuckoo
 Corncrake
 Dunnock
 Eurasian bittern
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 European white stork

Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Rock pigeon
 Snow bunting
 Spotted flycatcher
 Stonechat
 Winter wren

MONACO

Greater flamingo
 Northern gannet

MONGOLIA

Barn swallow
 Black tern
 Black-winged stilt
 Common cuckoo
 Crag martin
 Eurasian bittern
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Hoopoe
 Horned lark
 House sparrow
 Mallard
 Mute swan
 Northern raven
 Northern wryneck
 Nuthatch
 Pallas's sandgrouse
 Peregrine falcon
 Red crossbill
 Rock pigeon
 Snow bunting
 Snow finch

Spotted flycatcher
 Spotted nutcracker
 Stonechat

MOROCCO

Barn swallow
 Black-winged stilt
 Cattle egret
 Chaffinch
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common murre
 Corncrake
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Greater flamingo
 Greater hoopoe-lark
 Hoopoe
 Horned lark
 House sparrow
 Magnificent frigatebird
 Mallard
 Manx shearwater
 Northern gannet
 Northern raven
 Ostrich
 Peregrine falcon
 Rock pigeon
 Ruddy turnstone
 Small buttonquail
 Spotted flycatcher
 Stonechat
 Wilson's storm-petrel
 Winter wren
 Zitting cisticola

MOZAMBIQUE

African broadbill
African jacana
African palm swift
African paradise-flycatcher
African pitta
African snipe
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cape batis
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
Crab plovers
Eurasian golden oriole
European bee-eater
European roller
European white stork
Gray go-away-bird
Gray-crowned crane
Great cormorant
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Osprey
Ostrich
Peregrine falcon
Rock pigeon
Rosy-breasted longclaw
Ruddy turnstone
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Square-tailed drongo
Stonechat

Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

MYANMAR

Asian fairy-bluebird
Australasian lark
Barn swallow
Barred eagle-owl
Baya weaver
Black bulbul
Black-and-red broadbill
Black-naped monarch
Black-winged stilt
Cattle egret
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crested tree swift
Dollarbird
Fiery minivet
Fire-breasted flowerpecker
Gray nightjar
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Greater painted snipe
Greater racket-tailed drongo
Green magpie
Helmeted hornbill
Hooded pitta
Hoopoe
House sparrow
Mallard
Northern wryneck
Orange-breasted trogon
Osprey
Peregrine falcon
Pheasant-tailed jacana
Purple sunbird
Rock pigeon
Rose-ringed parakeet

Rose-ringed parakeet
Ruby-cheeked sunbird
Ruddy turnstone
Rufous-collared kingfisher
Small buttonquail
Spotted munia
Stonechat
White-throated fantail
Winter wren
Zitting cisticola

NAMIBIA

African jacana
African palm swift
African paradise-flycatcher
Arctic skua
Barn swallow
Black tern
Black-winged stilt
Cattle egret
Common cuckoo
Common waxbill
Egyptian vulture
Eurasian golden oriole
European roller
European white stork
Gray go-away-bird
Great cormorant
Great crested grebe
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Namaqua sandgrouse
Osprey
Ostrich
Peregrine falcon
Rock pigeon
Ruddy turnstone
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop

Spotted flycatcher
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

NEPAL

Asian fairy-bluebird
Barn swallow
Black-naped monarch
Cattle egret
Common cuckoo
Coppersmith barbet
Crested tree swift
Dollarbird
Egyptian vulture
Eurasian bittern
Eurasian golden oriole
European roller
European white stork
Fire-breasted flowerpecker
Gray nightjar
Gray wagtail
Great cormorant
Great crested grebe
Greater painted snipe
Hooded pitta
Hoopoe
House sparrow
Northern wryneck
Osprey
Peregrine falcon
Pheasant-tailed jacana
Purple sunbird
Rock pigeon
Rose-ringed parakeet
Ruby-cheeked sunbird
Satyr tragopan
Small buttonquail
Snow finch
Spotted munia
Spotted nutcracker
Stonechat
White-throated fantail
Winter wren

Zitting cisticola

NETHERLANDS

Barn swallow
Black tern
Chaffinch
Common cuckoo
Common murre
Corncrake
Duncock
Eurasian golden oriole
European roller
European starling
European white stork
Great auk
Great cormorant
Great crested grebe
Great tit
House sparrow
Mallard
Manx shearwater
Mute swan
Northern fulmar
Northern gannet
Northern lapwing
Northern wryneck
Nuthatch
Peregrine falcon
Puffin
Red-throated loon
Rock pigeon
Ruddy turnstone
Spotted flycatcher
Stonechat
Winter wren

NEW CALEDONIA

Beach thick-knee
Black-winged stilt
House sparrow
Kagu
Osprey
Painted buttonquail
Peregrine falcon
Rainbow lorikeet

White-tailed tropicbird

NEW ZEALAND

Arctic skua
Black-winged stilt
Brown kiwi
Canada goose
Cattle egret
Chatham mollymawk
Common diving-petrel
Emperor penguin
European starling
Great cormorant
Great crested grebe
House sparrow
Kokako
Laughing kookaburra
Mallard
Mute swan
Rifleman
Rock pigeon
Ruddy turnstone
Variable oystercatcher
Wilson's storm-petrel
Yellowhead

NICARAGUA

American anhinga
American dipper
American mourning dove
Baltimore oriole
Barn owl
Barred antshrike
Belted kingfisher
Black tern
Black-and-white warbler
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Brown creeper
Brown pelican
Cattle egret
Cedar waxwing
Crested caracara

Gray catbird
 Gray potoo
 Great blue heron
 Great kiskadee
 Harris's hawk
 House sparrow
 Killdeer
 King vulture
 Limpkin
 Long-tailed manakin
 Magnificent frigatebird
 Northern raven
 Osprey
 Peregrine falcon
 Plain chachalaca
 Resplendent quetzal
 Rock pigeon
 Roseate spoonbill
 Rose-throated becard
 Ruddy turnstone
 Rufous-browed peppershrike
 Rufous-tailed jacamar
 Scarlet macaw
 Sunbittern
 Sungrebe
 White-necked puffbird
 Wood stork
 Yellow-bellied sapsucker
 Yellow-breasted chat

NIGER

African jacana
 African palm swift
 African paradise-flycatcher
 Barn swallow
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Egyptian vulture
 Eurasian bittern
 European white stork
 Gray woodpecker
 Greater hoopoe-lark
 Greater painted snipe
 Green woodhoopoe

Hammerhead
 Helmeted guineafowl
 Hoopoe
 Northern wryneck
 Osprey
 Ostrich
 Peregrine falcon
 Rock pigeon
 Rose-ringed parakeet
 Sacred ibis
 Secretary bird
 Small buttonquail
 Village weaver
 Yellow-fronted tinkerbird
 Zitting cisticola

NIGERIA

African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 Bar-breasted mousebird
 Barn swallow
 Black tern
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common waxbill
 Eurasian bittern
 European roller
 European white stork
 Gray parrot
 Gray woodpecker
 Gray-necked picathartes
 Great blue turaco
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Lyre-tailed honeyguide
 Northern wryneck
 Osprey

Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird
 Zitting cisticola

NORTH KOREA

Arctic warbler
 Barn swallow
 Common cuckoo
 Common murre
 Dollarbird
 Eurasian bittern
 Gray nightjar
 Gray wagtail
 Great bustard
 Great cormorant
 Great tit
 Greater painted snipe
 Hoopoe
 Mute swan
 Nuthatch
 Red crossbill
 Red-crowned crane
 Red-throated loon
 Rock pigeon
 Saunder's gull
 Stonechat
 Winter wren

NORWAY

Arctic skua
 Arctic warbler
 Barn swallow
 Chaffinch
 Common cuckoo
 Common loon
 Common murre

Corncrake
 Dunnock
 Eurasian dipper
 European starling
 Gray wagtail
 Great auk
 Great cormorant
 Great crested grebe
 Great tit
 Gyrfalcon
 Horned lark
 House sparrow
 King eider
 Manx shearwater
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Peregrine falcon
 Puffin
 Red crossbill
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Snow bunting
 Snowy owl
 Spotted flycatcher
 Spotted nutcracker
 Willow ptarmigan
 Winter wren

OMAN

Crab plovers
 Egyptian vulture
 European roller
 Gray wagtail
 Greater hoopoe-lark
 Hoopoe
 House sparrow
 Osprey
 Peregrine falcon
 Purple sunbird
 Rock pigeon

Ruddy turnstone
 Wilson's storm-petrel

PAKISTAN

Barn swallow
 Baya weaver
 Black bulbul
 Black-winged stilt
 Cattle egret
 Chaffinch
 Collared pratincole
 Common cuckoo
 Common myna
 Coppersmith barbet
 Crab plovers
 Crag martin
 Egyptian vulture
 Eurasian bittern
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 European white stork
 Gray hypocolius
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Greater hoopoe-lark
 Greater painted snipe
 Hoopoe
 House sparrow
 Mallard
 Mute swan
 Northern lapwing
 Northern raven
 Osprey
 Peregrine falcon
 Pheasant-tailed jacana
 Purple sunbird
 Rock pigeon
 Rose-ringed parakeet
 Ruddy turnstone
 Small buttonquail
 Snow finch

Spotted flycatcher
 Spotted nutcracker
 Stonechat
 White-throated fantail
 Wilson's storm-petrel

PANAMA

American anhinga
 American dipper
 American mourning dove
 Baltimore oriole
 Barn owl
 Barn swallow
 Barred antshrike
 Belted kingfisher
 Black guan
 Black rail
 Black tern
 Black-and-white warbler
 Black-capped donacobius
 Black-winged stilt
 Blue-black grassquit
 Blue-crowned motmot
 Blue-footed booby
 Brown pelican
 Cattle egret
 Crested caracara
 Gray catbird
 Gray potoo
 Great blue heron
 Great kiskadee
 Hairy hermit
 Harris's hawk
 Highland tinamou
 House sparrow
 Killdeer
 King vulture
 Limpkin
 Magnificent frigatebird
 Oilbird
 Osprey
 Peregrine falcon
 Red-billed scythebill
 Resplendent quetzal
 Rock pigeon
 Roseate spoonbill

Rose-throated becard
Ruddy turnstone
Rufous-browed peppershrike
Rufous-tailed jacamar
Scarlet macaw
Sharpbill
Sunbittern
Sungrebe
White-necked puffbird
Wood stork
Yellow-bellied sapsucker

PAPUA NEW GUINEA

Australasian figbird
Australasian lark
Australian magpie-lark
Australian pratincole
Barn swallow
Beach thick-knee
Black-winged stilt
Cattle egret
Dollarbird
Eclectus parrot
Fan-tailed berrypecker
Feline owl-nightjar
Golden whistler
Gray wagtail
Gray-crowned babbler
Hooded pitta
Jacky winter
King bird of paradise
Osprey
Peregrine falcon
Rainbow lorikeet
Ribbon-tailed astrapia
Ruddy turnstone
Southern cassowary
Variable pitohui
White-tailed tropicbird
Willie wagtail
Wilson's storm-petrel
Zitting cisticola

PARAGUAY

American anhinga
American cliff swallow

Barn owl
Barn swallow
Barred antshrike
Baywing
Black-capped donacobius
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Cattle egret
Crested caracara
Gray potoo
Great kiskadee
Greater thornbird
Hairy hermit
Harris's hawk
House sparrow
King vulture
Limpkin
Peregrine falcon
Red-billed scythebill
Red-legged seriema
Roseate spoonbill
Rufous hornero
Rufous-browed peppershrike
Rufous-tailed jacamar
Sharpbill
Sungrebe
Toco toucan
Wood stork

PERU

Amazonian umbrellabird
American anhinga
Arctic skua
Barn owl
Barn swallow
Barred antshrike
Black rail
Black tern
Black-capped donacobius
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Blue-footed booby
Brown pelican
Cattle egret

Chimney swift
Common trumpeter
Coppery-chested jacamar
Crested caracara
Gray antbird
Gray potoo
Gray-breasted mountain-toucan
Great kiskadee
Hairy hermit
Harris's hawk
Highland tinamou
Hoatzin
Horned screamer
House sparrow
Killdeer
King vulture
Lesser rhea
Limpkin
Magellanic penguin
Oilbird
Osprey
Peregrine falcon
Peruvian plantcutter
Red-billed scythebill
Rock pigeon
Roseate spoonbill
Ruddy turnstone
Rufous-bellied seedsnipe
Rufous-browed peppershrike
Rufous-capped nunlet
Rufous-tailed jacamar
Rusty-belted tapaculo
Scarlet macaw
Sharpbill
Spangled cotinga
Sparkling violet-ear
Sunbittern
Sungrebe
Wattled curassow
White-necked puffbird
Wilson's storm-petrel
Wire-tailed manakin
Wood stork

PHILIPPINES

Arctic warbler

Asian fairy-bluebird
 Australasian lark
 Barn swallow
 Beach thick-knee
 Black-naped monarch
 Black-winged stilt
 Cattle egret
 Coppersmith barbet
 Dollarbird
 Fiery minivet
 Fire-breasted flowerpecker
 Gray nightjar
 Gray wagtail
 Greater painted snipe
 Hooded pitta
 Japanese white-eye
 Little slaty flycatcher
 Luzon bleeding heart
 Osprey
 Peregrine falcon
 Pheasant-tailed jacana
 Rock pigeon
 Ruddy turnstone
 Small buttonquail
 Spotted munia
 Stripe-headed rhabdornis
 Zitting cisticola

POLAND

Barn swallow
 Black tern
 Chaffinch
 Common cuckoo
 Common murre
 Corncrake
 Dunnock
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European roller
 European starling
 European white stork
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit

Hoopoe
 House sparrow
 Mallard
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Peregrine falcon
 Puffin
 Red crossbill
 Rock pigeon
 Snow bunting
 Snow finch
 Spotted flycatcher
 Spotted nutcracker
 Winter wren

PORTUGAL

Barn swallow
 Black-winged stilt
 Chaffinch
 Collared pratincole
 Common cuckoo
 Common loon
 Common murre
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European white stork
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Manx shearwater
 Northern gannet

Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Peregrine falcon
 Red crossbill
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Spotted flycatcher
 Stonechat
 Wilson's storm-petrel
 Winter wren
 Zitting cisticola

PUERTO RICO

American mourning dove
 Barn owl
 Belted kingfisher
 Brown pelican
 Cattle egret
 Crested caracara
 European starling
 Greater flamingo
 House sparrow
 Killdeer
 Magnificent frigatebird
 Osprey
 Peregrine falcon
 Rock pigeon
 Ruddy turnstone
 White-tailed tropicbird
 Wood stork
 Yellow-bellied sapsucker

QATAR

European roller
 Greater hoopoe-lark
 Hoopoe
 House sparrow
 Stonechat

ROMANIA

Barn swallow

Black tern
 Black-winged stilt
 Chaffinch
 Collared pratincole
 Common cuckoo
 Corncrake
 Dunnock
 Egyptian vulture
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 European white stork
 Gray wagtail
 Great cormorant
 Great crested grebe
 Great tit
 Hoopoe
 House sparrow
 Mallard
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Peregrine falcon
 Red crossbill
 Red-throated loon
 Rock pigeon
 Snow bunting
 Spotted flycatcher
 Stonechat
 Winter wren

RUSSIA

Arctic skua
 Arctic warbler
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Chaffinch
 Collared pratincole
 Common cuckoo

Common murre
 Corncrake
 Crag martin
 Dollarbird
 Dunnock
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European starling
 European white stork
 Gray nightjar
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Great tit
 Greater painted snipe
 Gyrfalcon
 Hoopoe
 Horned lark
 House sparrow
 King eider
 Mallard
 Mute swan
 Northern fulmar
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Nuthatch
 Osprey
 Pallas's sandgrouse
 Peregrine falcon
 Puffin
 Red crossbill
 Red-crowned crane
 Red-throated loon
 Rock pigeon
 Ruddy turnstone
 Sandhill crane
 Snow bunting
 Snow finch
 Snowy owl
 Spotted flycatcher
 Spotted nutcracker

Stonechat
 Willow ptarmigan
 Winter wren

RWANDA

African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 African snipe
 Bar-breasted mousebird
 Barn swallow
 Black-winged stilt
 Buff-spotted flufftail
 Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Corncrake
 Eurasian golden oriole
 European bee-eater
 European roller
 European white stork
 Gray parrot
 Gray woodpecker
 Gray-crowned crane
 Great blue turaco
 Great cormorant
 Great crested grebe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Sacred ibis
 Shoebill
 Small buttonquail
 Southern red bishop
 Spotted flycatcher
 Stonechat
 Village weaver

Yellow-fronted tinkerbird
Zitting cisticola

SÃO TOMÉ AND PRÍNCIPE

White-tailed tropicbird

SAUDI ARABIA

African palm swift
Black-winged stilt
Cattle egret
Crab plovers
Crag martin
Egyptian vulture
European roller
Gray hypocolius
Gray wagtail
Great cormorant
Greater hoopoe-lark
Hammerhead
Hoopoe
House sparrow
Mallard
Northern lapwing
Osprey
Peregrine falcon
Rock pigeon
Ruddy turnstone
Stonechat
Wilson's storm-petrel

SENEGAL

African palm swift
African paradise-flycatcher
Black tern
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Egyptian vulture
Eurasian bittern
European roller
European white stork
Gray wagtail

Gray woodpecker
Greater flamingo
Greater hoopoe-lark
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Leaf-love
Magnificent frigatebird
Northern wryneck
Osprey
Peregrine falcon
Rose-ringed parakeet
Ruddy turnstone
Sacred ibis
Secretary bird
Small buttonquail
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

SEYCHELLES

White-tailed tropicbird

SIERRA LEONE

African broadbill
African palm swift
African paradise-flycatcher
African pitta
Barn swallow
Black tern
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Eurasian bittern
Gray parrot
Gray woodpecker
Great blue turaco
Hammerhead
Leaf-love

Lyre-tailed honeyguide
Northern wryneck
Osprey
Peregrine falcon
Rose-ringed parakeet
Ruddy turnstone
Sacred ibis
Small buttonquail
Spotted flycatcher
Square-tailed drongo
Village weaver
Wilson's storm-petrel

SINGAPORE

Baya weaver

SLOVAKIA

Barn swallow
Black tern
Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Dunnock
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow bunting
Snow finch
Spotted flycatcher

Stonechat
Winter wren

SLOVENIA

Barn swallow
Black tern
Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Dunnock
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Rock pigeon
Snow bunting
Snow finch
Spotted flycatcher
Stonechat
Winter wren
Zitting cisticola

SOMALIA

African jacana
African palm swift
African paradise-flycatcher
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Cattle egret
Collared pratincole
Common bulbul

Corncrake
Crab plovers
Egyptian vulture
European roller
European white stork
Gray wagtail
Great cormorant
Greater hoopoe-lark
Green woodhoopoe
Hammerhead
Hoopoe
Ostrich
Peregrine falcon
Red-billed oxpecker
Rose-ringed parakeet
Ruddy turnstone
Sacred ibis
Small buttonquail
Spotted flycatcher
Square-tailed drongo
Stonechat
White-helmet shrike
Wilson's storm-petrel

SOUTH AFRICA

African jacana
African palm swift
African paradise-flycatcher
African snipe
Arctic skua
Bar-breasted mousebird
Barn swallow
Black tern
Black-winged stilt
Blue bustard
Buff-spotted flufftail
Cape batis
Cape sugarbird
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
Crab plovers
Eurasian golden oriole

European bee-eater
European roller
European starling
European white stork
Gray-crowned crane
Great cormorant
Great crested grebe
Greater flamingo
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Manx shearwater
Mute swan
Namaqua sandgrouse
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rock pigeon
Rosy-breasted longclaw
Ruddy turnstone
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Square-tailed drongo
Stonechat
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

SOUTH KOREA

Arctic warbler
Barn swallow
Cattle egret
Common cuckoo
Common murre
Dollarbird
Eurasian bittern

Gray nightjar
Gray wagtail
Great cormorant
Great tit
Greater painted snipe
Japanese white-eye
Mallard
Mute swan
Northern lapwing
Nuthatch
Red crossbill
Red-throated loon
Rock pigeon
Saunders's gull
Stonechat
Winter wren

SPAIN

Barn swallow
Black-winged stilt
Chaffinch
Collared pratincole
Common cuckoo
Common loon
Common murre
Corncrake
Crag martin
Dunnock
Egyptian vulture
Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European white stork
Gray wagtail
Great auk
Great bustard
Great cormorant
Great crested grebe
Great tit
Greater flamingo
Hoopoe
House sparrow
Mallard
Manx shearwater

Northern fulmar
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Ruddy turnstone
Small buttonquail
Snow finch
Spotted flycatcher
Stonechat
Wilson's storm-petrel
Winter wren
Zitting cisticola

SRI LANKA

Baya weaver
Black bulbul
Common iora
Common myna
Coppersmith barbet
Crested tree swift
Dollarbird
Eurasian golden oriole
Gray nightjar
Great tit
Greater racket-tailed drongo
House sparrow
Pheasant-tailed jacana
Purple sunbird
Rose-ringed parakeet
Spotted munia
White-throated fantail
Wilson's storm-petrel

SUDAN

African jacana
African palm swift
African paradise-flycatcher
Bar-breasted mousebird
Barn swallow

Black tern
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Corncrake
Crab plovers
Crag martin
Egyptian vulture
Eurasian bittern
European roller
European white stork
Gray wagtail
Gray woodpecker
Great blue turaco
Great cormorant
Greater flamingo
Greater hoopoe-lark
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
Leaf-love
Northern wryneck
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rock pigeon
Rose-ringed parakeet
Ruddy turnstone
Sacred ibis
Secretary bird
Shoebill
Small buttonquail
Spotted flycatcher
Square-tailed drongo
Stonechat
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

SURINAME

American anhinga
Barn owl
Barn swallow
Barred antshrike
Black tern
Black-capped donacobius
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Brown pelican
Cattle egret
Common trumpeter
Crested caracara
Gray antbird
Gray potoo
Great kiskadee
Guianan cock-of-the-rock
Hairy hermit
Hoatzin
King vulture
Limpkin
Magnificent frigatebird
Osprey
Peregrine falcon
Roseate spoonbill
Ruddy turnstone
Rufous-browed peppershrike
Scarlet macaw
Sharpbill
Spangled cotinga
Sunbittern
Sungrebe
White-necked puffbird
Wilson's storm-petrel
Wood stork

SWAZILAND

African jacana
African palm swift
African paradise-flycatcher
African snipe
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cape batis

Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
European bee-eater
European roller
European white stork
Great cormorant
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Osprey
Peregrine falcon
Sacred ibis
Secretary bird
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Stonechat
Village weaver
White-helmet shrike
Zitting cisticola

SWEDEN

Barn swallow
Chaffinch
Common cuckoo
Common murre
Corncrake
Dunnock
Eurasian bittern
Eurasian dipper
European roller
European starling
Gray wagtail
Great auk
Great cormorant
Great crested grebe
Great tit
Gyr Falcon

Hoopoe
Horned lark
House sparrow
Mute swan
Northern fulmar
Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Osprey
Peregrine falcon
Puffin
Red crossbill
Red-throated loon
Rock pigeon
Ruddy turnstone
Snow bunting
Spotted flycatcher
Spotted nutcracker
Willow ptarmigan
Winter wren

SWITZERLAND

Barn swallow
Black tern
Chaffinch
Common cuckoo
Corncrake
Dunnock
Eurasian dipper
Eurasian golden oriole
European roller
European starling
European white stork
Gray wagtail
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck

Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Snow finch
Spotted flycatcher
Spotted nutcracker
Stonechat
Winter wren

SYRIA

Black-winged stilt
Cattle egret
Chaffinch
Collared pratincole
Common bulbul
Common cuckoo
Corncrake
Crag martin
Dunnock
Egyptian vulture
European bee-eater
European roller
European starling
Great bustard
Great cormorant
Greater flamingo
Hoopoe
House sparrow
Mallard
Northern gannet
Northern lapwing
Nuthatch
Peregrine falcon
Red crossbill
Rock pigeon
Spotted flycatcher
Stonechat
Winter wren

TAJIKISTAN

Barn swallow
Chaffinch
Common cuckoo
Crag martin
Egyptian vulture

Eurasian golden oriole
European roller
European starling
Great bustard
Great cormorant
Great crested grebe
Great tit
Hoopoe
House sparrow
Mallard
Northern raven
Peregrine falcon
Rock pigeon
Snow finch
Spotted flycatcher
Stonechat
Winter wren

TANZANIA

African broadbill
African jacana
African palm swift
African paradise-flycatcher
African pitta
African snipe
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common waxbill
Corncrake
Crab plovers
Eurasian golden oriole
European bee-eater
European roller
European white stork
Golden-winged sunbird
Gray go-away-bird
Gray wagtail
Gray woodpecker
Great cormorant
Great crested grebe
Greater flamingo

Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Leaf-love
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rock pigeon
Rosy-breasted longclaw
Ruddy turnstone
Sacred ibis
Secretary bird
Shoebill
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Square-tailed drongo
Stonechat
Village weaver
White-helmet shrike
Wilson's storm-petrel
Yellow-fronted tinkerbird
Zitting cisticola

THAILAND

Arctic warbler
Asian fairy-bluebird
Australasian lark
Barn swallow
Barred eagle-owl
Baya weaver
Black bulbul
Black-and-red broadbill
Black-naped monarch
Black-winged stilt
Cattle egret
Common cuckoo
Common iora
Common myna
Coppersmith barbet
Crested tree swift

Dollarbird
 Fiery minivet
 Fire-breasted flowerpecker
 Gray nightjar
 Gray wagtail
 Great cormorant
 Greater painted snipe
 Greater racket-tailed drongo
 Green magpie
 Helmeted hornbill
 Hooded pitta
 Hoopoe
 Malaysian honeyguide
 Northern lapwing
 Northern wryneck
 Orange-breasted trogon
 Osprey
 Peregrine falcon
 Pheasant-tailed jacana
 Purple sunbird
 Rock pigeon
 Ruby-cheeked sunbird
 Ruddy turnstone
 Rufous-collared kingfisher
 Small buttonquail
 Spotted munia
 Stonechat
 White-throated fantail
 Zitting cisticola

TOGO

African jacana
 African palm swift
 African paradise-flycatcher
 Barn swallow
 Black tern
 Black-winged stilt
 Cattle egret
 Collared pratincole
 Common bulbul
 Eurasian bittern
 European bee-eater
 European roller
 Gray parrot
 Gray woodpecker
 Great blue turaco

Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 Leaf-love
 Northern wryneck
 Osprey
 Peregrine falcon
 Rose-ringed parakeet
 Ruddy turnstone
 Sacred ibis
 Secretary bird
 Small buttonquail
 Spotted flycatcher
 Square-tailed drongo
 Village weaver
 White-helmet shrike
 Wilson's storm-petrel
 Yellow-fronted tinkerbird
 Zitting cisticola

TRINIDAD AND TOBAGO

Blue-crowned motmot
 Gray potoo
 Hairy hermit
 Oilbird
 Rufous-tailed jacamar

TUNISIA

Barn swallow
 Black-winged stilt
 Collared pratincole
 Common bulbul
 Corncrake
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian bittern
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great cormorant
 Great crested grebe

Greater flamingo
 Greater hoopoe-lark
 Hoopoe
 House sparrow
 Northern gannet
 Northern lapwing
 Northern raven
 Northern wryneck
 Peregrine falcon
 Rock pigeon
 Ruddy turnstone
 Small buttonquail
 Spotted flycatcher
 Stonechat
 Winter wren
 Zitting cisticola

TURKEY

Barn swallow
 Black tern
 Cattle egret
 Chaffinch
 Collared pratincole
 Common bulbul
 Common cuckoo
 Corncrake
 Crag martin
 Dunnock
 Egyptian vulture
 Eurasian bittern
 Eurasian dipper
 Eurasian golden oriole
 European bee-eater
 European roller
 European starling
 Gray wagtail
 Great bustard
 Great cormorant
 Great crested grebe
 Great tit
 Greater flamingo
 Hoopoe
 Horned lark
 House sparrow
 Mallard
 Mute swan

Northern gannet
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Snow finch
Spotted flycatcher
Stonechat
Winter wren
Zitting cisticola

TURKMENISTAN

Barn swallow
Black-winged stilt
Cattle egret
Chaffinch
Collared pratincole
Common cuckoo
Common myna
Crag martin
Egyptian vulture
Eurasian bittern
Eurasian golden oriole
European bee-eater
European roller
European starling
Gray hypocolius
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Northern lapwing
Northern raven
Nuthatch
Peregrine falcon
Red-throated loon
Rock pigeon
Spotted flycatcher

Winter wren

UGANDA

African broadbill
African jacana
African palm swift
African paradise-flycatcher
African pitta
African snipe
Bar-breasted mousebird
Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
Egyptian vulture
Eurasian golden oriole
European roller
European white stork
Golden-winged sunbird
Gray parrot
Gray woodpecker
Gray-crowned crane
Great blue turaco
Great cormorant
Great crested grebe
Greater painted snipe
Green woodhoopoe
Hammerhead
Hemmed guineafowl
Hoopoe
Leaf-love
Northern wryneck
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rose-ringed parakeet
Sacred ibis
Secretary bird
Shoebill

Small buttonquail
Southern red bishop
Spotted flycatcher
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird
Zitting cisticola

UKRAINE

Barn swallow
Black tern
Black-winged stilt
Chaffinch
Collared pratincole
Common cuckoo
Corncrake
Dunnock
Eurasian bittern
Eurasian golden oriole
European bee-eater
European roller
European starling
European white stork
Gray wagtail
Great bustard
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Mute swan
Northern lapwing
Northern raven
Northern wryneck
Nuthatch
Osprey
Peregrine falcon
Red crossbill
Red-throated loon
Rock pigeon
Snow bunting
Spotted flycatcher
Spotted nutcracker

Stonechat
Winter wren

UNITED ARAB EMIRATES

Crab plovers
Egyptian vulture
European roller
Greater hoopoe-lark
Hoopoe
House sparrow
Northern lapwing
Osprey
Purple sunbird
Rock pigeon
Ruddy turnstone
Stonechat
Wilson's storm-petrel

UNITED KINGDOM

Barn owl
Barn swallow
Canada goose
Chaffinch
Common cuckoo
Common loon
Common murre
Corncrake
Dunnock
Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European roller
European starling
Gray wagtail
Great auk
Great cormorant
Great crested grebe
Great tit
House sparrow
Mallard
Manx shearwater
Mute swan
Northern gannet
Northern lapwing

Northern raven
Northern wryneck
Nuthatch
Osprey
Peregrine falcon
Puffin
Red crossbill
Red-throated loon
Rock pigeon
Ruddy turnstone
Snow bunting
Spotted flycatcher
Stonechat
Willow ptarmigan
Winter wren

UNITED STATES

American anhinga
American avocet
American cliff swallow
American dipper
American goldfinch
American mourning dove
American robin
American white pelican
Anna's hummingbird
Apapane
Arctic skua
Arctic warbler
Baltimore oriole
Barn owl
Barn swallow
Belted kingfisher
Bishop's oo
Black rail
Black tern
Black-and-white warbler
Black-capped chickadee
Black-capped vireo
Black-winged stilt
Blue jay
Blue-gray gnatcatcher
Brown creeper
Brown pelican
Bushtit

Cactus wren
California condor
Canada goose
Cattle egret
Cedar waxwing
Chimney swift
Common loon
Common murre
Crested caracara
Eastern bluebird
Eastern phoebe
Eastern screech-owl
European starling
Gray catbird
Great auk
Great blue heron
Great cormorant
Great kiskadee
Greater roadrunner
Gyr Falcon
Harris's hawk
Hawaiian honeycreepers
Horned lark
House sparrow
House wren
Ivory-billed woodpecker
Killdeer
King eider
Kirtland's warbler
Laysan albatross
Laysan finch
Limpkin
Loggerhead shrike
Long-billed curlew
Magnificent frigatebird
Mallard
Manx shearwater
Mute swan
Northern bobwhite quail
Northern fulmar
Northern gannet
Northern raven
Osprey
Peregrine falcon
Plain chachalaca
Puffin

Red crossbill
Red-breasted nuthatch
Red-cockaded woodpecker
Red-throated loon
Red-winged blackbird
Rock pigeon
Roseate spoonbill
Rose-throated becard
Ruddy turnstone
Sandhill crane
Savanna sparrow
Snow bunting
Song sparrow
Sprague's pipit
Verdin
Western grebe
Western scrub-jay
Whip-poor-will
White-tailed tropicbird
Wild turkey
Willow ptarmigan
Wilson's storm-petrel
Winter wren
Wood duck
Wood stork
Wrentit
Yellow-bellied sapsucker
Yellow-breasted chat

URUGUAY

American anhinga
American cliff swallow
Barn owl
Baywing
Black-winged stilt
Cattle egret
Crested caracara
Gray potoo
Great kiskadee
Greater thornbird
Harris's hawk
House sparrow
King vulture
Limpkin
Magellanic penguin
Manx shearwater

Peregrine falcon
Red-legged seriema
Rock pigeon
Roseate spoonbill
Ruddy turnstone
Rufous hornero
Wilson's storm-petrel
Wood stork

UZBEKISTAN

Barn swallow
Black-winged stilt
Chaffinch
Collared pratincole
Common cuckoo
Common myna
Crag martin
Egyptian vulture
Eurasian bittern
Eurasian dipper
Eurasian golden oriole
European bee-eater
European roller
European starling
Great bustard
Great cormorant
Great crested grebe
Great tit
Hoopoe
Horned lark
House sparrow
Mallard
Northern raven
Pallas's sandgrouse
Peregrine falcon
Rock pigeon

VENEZUELA

Amazonian umbrellabird
American anhinga
Baltimore oriole
Barn owl
Barn swallow
Barred antshrike
Belted kingfisher
Black tern

Black-and-white warbler
Black-capped donacobius
Black-winged stilt
Blue-black grassquit
Blue-crowned motmot
Brown pelican
Cattle egret
Common trumpeter
Crested caracara
Gray antbird
Gray potoo
Great kiskadee
Greater flamingo
Guianan cock-of-the-rock
Hairy hermit
Harris's hawk
Highland tinamou
Hoatzin
Horned screamer
King vulture
Limpkin
Magnificent frigatebird
Oilbird
Osprey
Peregrine falcon
Red-billed scythebill
Roseate spoonbill
Ruddy turnstone
Rufous-browed peppershrike
Rufous-tailed jacamar
Scarlet macaw
Sharpbill
Spangled cotinga
Sparkling violet-ear
Sunbittern
Sungrebe
White-necked puffbird
Wilson's storm-petrel
Wire-tailed manakin
Wood stork

VIETNAM

Arctic warbler
Asian fairy-bluebird
Australasian lark
Barn swallow

Baya weaver
 Black bulbul
 Black-and-red broadbill
 Black-crowned barwing
 Black-naped monarch
 Black-winged stilt
 Cattle egret
 Common cuckoo
 Common iora
 Common myna
 Coppersmith barbet
 Crag martin
 Crested tree swift
 Dollarbird
 Eurasian bittern
 Fire-breasted flowerpecker
 Gray nightjar
 Gray wagtail
 Great cormorant
 Great tit
 Greater painted snipe
 Greater racket-tailed drongo
 Green magpie
 Hoopoe
 Northern wryneck
 Orange-breasted trogon
 Osprey
 Peregrine falcon
 Pheasant-tailed jacana
 Purple sunbird
 Rock pigeon
 Ruby-cheeked sunbird
 Ruddy turnstone
 Saunder's gull
 Small buttonquail
 Spotted munia
 Stonechat
 White-throated fantail
 Zitting cisticola

YEMEN

African palm swift
 Cattle egret
 Crab plovers
 Crag martin
 Egyptian vulture

European roller
 Gray wagtail
 Greater hoopoe-lark
 Hammerhead
 Hoopoe
 House sparrow
 Osprey
 Peregrine falcon
 Rock pigeon
 Ruddy turnstone
 Stonechat
 Wilson's storm-petrel

YUGOSLAVIA

Common cuckoo
 Corncrake
 Crag martin
 Egyptian vulture
 Eurasian dipper
 European bee-eater
 European roller
 European white stork
 Gray wagtail
 Great cormorant
 Great crested grebe
 Hoopoe
 Horned lark
 Mallard
 Northern lapwing
 Peregrine falcon
 Rock pigeon
 Snow bunting
 Zitting cisticola

ZAMBIA

African broadbill
 African jacana
 African palm swift
 African paradise-flycatcher
 African pitta
 African snipe
 Bar-breasted mousebird
 Barn swallow
 Black-winged stilt
 Buff-spotted flufftail

Cattle egret
 Collared pratincole
 Common bulbul
 Common cuckoo
 Common waxbill
 Corncrake
 Eurasian golden oriole
 European bee-eater
 European roller
 European white stork
 Gray go-away-bird
 Gray-crowned crane
 Great cormorant
 Greater flamingo
 Greater painted snipe
 Green woodhoopoe
 Hammerhead
 Helmeted guineafowl
 Hoopoe
 House sparrow
 Osprey
 Ostrich
 Peregrine falcon
 Red-billed oxpecker
 Rosy-breasted longclaw
 Sacred ibis
 Secretary bird
 Shoebill
 Small buttonquail
 Southern ground-hornbill
 Southern red bishop
 Spotted flycatcher
 Square-tailed drongo
 Stonechat
 Village weaver
 White-helmet shrike
 Yellow-fronted tinkerbird
 Zitting cisticola

ZIMBABWE

African broadbill
 African palm swift
 African paradise-flycatcher
 African pitta
 African snipe
 Bar-breasted mousebird

Barn swallow
Black-winged stilt
Buff-spotted flufftail
Cape batis
Cattle egret
Collared pratincole
Common bulbul
Common cuckoo
Common waxbill
Corncrake
Eurasian golden oriole
European bee-eater
European roller
European white stork

Gray go-away-bird
Gray-crowned crane
Great cormorant
Greater painted snipe
Green woodhoopoe
Hammerhead
Helmeted guineafowl
Hoopoe
House sparrow
Osprey
Ostrich
Peregrine falcon
Red-billed oxpecker
Rock pigeon

Rosy-breasted longclaw
Sacred ibis
Secretary bird
Shoebill
Small buttonquail
Southern ground-hornbill
Southern red bishop
Spotted flycatcher
Stonechat
Village weaver
White-helmet shrike
Yellow-fronted tinkerbird
Zitting cisticola